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IDEOLOGY AND IDENTITY:

A COMPREHENSIVE SCHOOL SCIENCE DEPARTMENT

IN TRANSITION

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Thesis submitted to the Open University in  
fulfilment of the requirements for the  
Degree of M.Phil.

Department of Educational Studies

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## ABSTRACT

This is a participant observer study of the natural history of a science department in a newly established 11-16 comprehensive school. The formation and transformation of the department is described, as efforts were made to provide an education in science for 1500 pupils of varying ability.

Early data collection and analysis revealed the central importance of the curriculum process. Using the concept of periodicity, an annual cycle and the phases in this cycle were discovered. Individuals and groups were identified who were involved with the different phases of the curriculum process. They were seen to occupy different locales, levels and statuses in the organisation, stages in their careers, and supporting educational ideologies.

The science curriculum process was initiated by management - a group of senior teacher administrators led by the Headmaster. Curriculum policy was formulated by them after some discussions with the Head of Science. The formula determined time allotted, material and human resources, as well as which science subjects were to be taught in the upper school. What form school science should take was decided by the Head of Science unilaterally. Nuffield Combined Science was established in years 1 and 2, followed in the third year by separate sciences. Nuffield Combined Science particularly learning through "guided discovery", became a bone of contention giving rise to dispute, through which different beliefs and ideological commitments were revealed.

Implementation and monitoring of the curriculum was a departmental concern. Whilst a curriculum package was imposed in the lower school favouring integrated science, resource based learning and discovery methods, it was subverted by some of the science staff. Efforts to monitor teaching were not entirely successful. Other constraints originating from management decisions such as reduction in technicians, capitation, increasing class size, preference for setting and the use of text books undermined the whole philosophy of guided discovery. The morale of those who supported the curriculum innovation was lowered. Under pressure from management and science teacher colleagues they yielded. Nuffield Combined Science was remodelled and taught in a traditional way to setted groups using didactic methods.

Confusion in the aims of the curriculum led to disagreement over evaluation. Management accepted external examinations as an independent objective measure of the effectiveness of the science curriculum. Some staff in the department did not agree. Because examination results were not up to expectations efforts were made to improve them and the image of the

department within the school. The image projected was that of an academic institution capable of educating pupils of ability to the highest standard.

Efforts were also made to attract well qualified specialist science staff - graduate scientists - to staff the department in the belief that only by improving the "quality" of the staff would the examination results improve.

Those staff already in the department found promotion prospects reduced and greater competition from outside. Those non-graduates who were career orientated embarked upon programmes of graduate studies to improve qualifications.

Through the shared experience secondary socialisation took place, resulting in changes in individual's self-identity and ideological commitments.

### ACKNOWLEDGEMENTS

This research could not have been carried out without the consent of the Headmaster and staff of Magdalene Comprehensive School. That this consent was given freely, is taken as a measure of their trust and confidence that the research would be carried out impartially, and that the integrity of individuals would be respected. I am indebted also for the constant support, guidance and encouragement so freely given by my internal tutor, Dr P Woods, Senior Lecturer in the Department of Educational Studies at the Open University, and Dr R Meighan, Senior Lecturer in the Department of Education at the University of Birmingham.

## **CHAPTER I**

**INTRODUCTORY HISTORICAL AND**

**BIOGRAPHICAL DETAIL**

## NATIONAL POLICY AND THE MERGING PATTERN OF SECONDARY SCHOOL EDUCATION

Secondary education for all was provided for the first time in this country by the Education Act of 1944. Before that time secondary education had been provided for the few who attended the fee paying schools or gained scholarships to grammar schools. The basis of the new secondary education lay in the view, then current, of children's abilities and the belief in the ability of psychologists to measure them.

“.... attitudes and beliefs that educationists hold with respect to the concept of intelligence exert an influence both on the way the education system develops and on the classroom practices of the teachers in it.” (Pidgeon : 1970, p 118)

“The newly developed theories of intelligence were used to satisfy different kinds of educational provision.” (Simon : 1969, p.362)

The Act stated that children were to be educated according to their 'age, aptitude and ability'. The consensus of psychological thought was that each child had a factor of general intelligence in addition to a number of special abilities such as a facility for learning music or painting. This thinking came to be interpreted administratively as the 11+ examination and the tripartite system of education. Grammar, technical and secondary modern schools were established.

### The grammar school ethos

“Ethos having two aspects (i) aesthetic - distinct style and taste within the culture; (ii) morality of community through which individual searches for true identity based on the ideals and values held. Educational ethos relates individuals to the occupational structure.” (Sugarman : 1973, p 3)

was a middle class one. Boys and girls gaining admission to grammar schools were largely from the professional classes and were expected to study a curriculum which would lead to the School Certificate as an entry to further and higher education, eventually to take up their places amongst the ranks of the middle class. Likewise the staff in such schools were predominately drawn from the same strata having the same educational background, shared culture and aspirations. The curriculum was one that had evolved over many centuries.



Weber distinguishes between 3 major types of legitimation of authority, traditional, charismatic and legal-rational. (Weber : 1946) The traditional curriculum is legitimised by the fact that things have always been done this way. Its lineage has been traced back to the Middle Ages. The emphasis then was on knowledge of the classical languages, mathematics and music. The latter owed its presence to the historical connection with the Church through cathedral and chantry schools. The guardians and guarantors of standards were the Universities: the school certificate syllabuses and examinations being controlled by them. These interest groups coalesced resisting interference from pressure groups or the State.

Technical schools adopted a curriculum which acknowledged the career openings of their pupils. In this respect they were vocational. However whilst they accepted the restrictions on the curriculum - both content and method imposed by adopting the School Certificate - they were influenced more by other factors i.e. the kind of education given by the Higher Grade Schools, Mechanics Institutes and award giving bodies such as the Royal Institute of Chemistry. (Cotgrove : 1958) A plethora of examining bodies serving the needs of the man-power required by a highly differentiated technological society standing outside and apart from the secondary system of education existed. A study of the introduction of Science into the curriculum of Grammar and Public Schools plots this belated and slow assimilation. (Jenkins : 1979) The insularity and division between systems within Society namely the Educational and Industrial Systems was almost total.

The third type of school was the secondary modern school. To these schools boys and girls from the all-age schools in village and town were to come.

“The attempts of the School Boards to upgrade elementary education to secondary education in the 1920's had been resisted.” (Simon : 1969, p 362)

And so it was 20 years later that a secondary system of education for all was begun. There were enormous problems not least amongst which was availability of schools. A large building programme was embarked upon. But what was lacking was a vision of what the curriculum of these secondary schools should be; undoubtedly many were viewed as senior elementary schools, others looked to the grammar schools and industry - many experimented but what was lacking was finance and a vision of their full potential.

Pedley quotes:

“If anyone doubts that these different types of school are in fact regarded as different grades of schools with superior and inferior social status he is blind to indications of various kinds.”  
(Pedley : 1957, p 19)

Whilst the 1944 Act does not prescribe separate grammar, technical and modern schools it does stress individual differences between pupils and supports ‘variety of instruction and training as may be desirable in view of their different ages, abilities and aptitudes and of the different periods for which they may be expected to remain at school.’

There were points of weakness in the tripartite system which were exposed by research and also by teachers within the three kinds of schools. Early selection, a different curriculum, unequal opportunity and status afforded by the schools contributed to its gradual abandonment. At first there was talk of multilateral schools, now comprehensive schools but the terms are not specific, particularly when individual schools are considered within the pattern of schooling within their area.

The school in this study is an 11-16 Aided School. It has a catchment area encompassing a sector of a residential area of a market town, several outlying villages and approximately a 20% intake from the wider county area. It is a State school having no fee payers and is unselective with the exception of those having church places. These are given on the basis of membership of a religious community, irrespective of a child’s aptitude and ability. Policy guidelines for the complex changeover were laid down by the Secretary of State for Education and Science in a Circular to Local Education Authorities which said that the aims of a comprehensive school were to establish a school community in which pupils over the whole ability range and with differing backgrounds can be encouraged to mix with each other, gaining stimulus from the contacts and learning tolerance and understanding in the process.

The main provisions of the 1944 Act have been established where a comprehensive system of education has come into being; fees were abolished in all maintained secondary schools, and the school leaving age has been raised to 16. Two objectives have not been reached; one concerns the establishment of tertiary education in County colleges, the other which has more relevance for this study is the provision of an education for all pupils based on age, aptitude and ability. The dissolution of the three types of schools of the tripartite system and the crystallisation of secondary comprehensive schools as orthodox comprehensive schools with an age range of 11-18, or a two-tier system in which all pupils transfer at 11

to a junior high school and all go on at 14 to senior high school and other variants is but a first step. After all a change in the name and intake to a school, is but a beginning if an open system of secondary education for all is to be established. Changing the curriculum and systems of internal organisation still have to cope with the realities of the new school situation. When the Schools' Council was set up in 1964 to review existing external examinations and the curriculum, much of its early work was done in the context of a divided secondary education system. The Nuffield Physics curriculum project had the grammar school population in mind. Lately the introduction of the C.S.E. for about the next 40% of pupils leaves about 40% of children without a leaving certificate or measure of their achievements after five years attendance at secondary school. Dissatisfaction with this state of affairs from within and without the educational system seem likely to be at the back of any future developments in this area.

There has been a flood of curriculum projects from the Schools' Council on almost every subject of the traditional school curriculum. Some recommending integration of subject areas in response to pressures on the schools to increase the content and variety of subjects on offer; or coming from pioneers in curriculum reform motivated by the growing interest in the philosophy of knowledge and the insistent pleas for relevance and accountability.

#### HOW SUCH EDUCATIONAL POLICY WAS INTERPRETED AND IMPLEMENTED IN ONE LOCAL AUTHORITY

Local authorities whilst responsible for the character of the schools - the governors for the curriculum - must be perplexed by the conflicting views. And so in general are guided by the past and in so doing limit the possibility and pace of change taking place in the new schools. From this we shall see that comprehensive schools are the sites where groups swayed by different traditions and ideologies have been brought together and conflict. How will they see the task? Will they simply attempt to impose their own definition of the situation, hoping to convert others to the same view? Will a new definition be worked out and constructed from fragments of the old? Or will the encounter with others holding different values and beliefs be so strange as to warrant withdrawal to an enclave where support and refuge is received? The growth in private education might be accounted for in these terms. The emerging comprehensive school is the scene for such action. Will one school for all remain an aspiration rather than a reality? (Cox : 1971)

Studies of schools are either personal accounts, (Kneebone : 1957, Dempster : 1958) surveys giving an overview, or historical studies (Fenwick : 1980) based on administrative

documents or government edicts. They are not intended to be scientific explanations. These require a thorough and critical examination of the objective and subjective reality of participants. There are some notable exceptions, amongst them the school studies carried out by Hargreaves : 1967, Webb : 1962, Lacey : 1970 and Woods : 1979. These writers spent a year or more in a school which they were studying. As researchers they joined the school taking part in its on going life while at the same time observing acts and exploring relationships in an attempt to discover the different meanings and motives of the actors as they construct creatively their different lines of action. By gaining acceptance as colleague through contributing to the teaching task and sharing work load over a lengthy period of time, the researcher's role was not intrusive and so did not upset the natural situation. Their knowledge of schools and previous experience as teachers enabled them to perform their role without arousing suspicion by making 'faux pas' or 'gaffes' which would destroy their cover.

In a move from general to the particular it will be possible to study the micro world of a science department within one comprehensive school. But it will be still possible to study some of the consequences of national and local government policy decisions because at the end of the day they are made to affect individuals.

As early as the late sixties the Local Education Authority had decided in principle to re-organise its schools on comprehensive lines. Two important questions remained if this decision was to be put into practice. One question concerned the type of comprehensive schools to be set up and the other question was directed to the time. The Education Committee decided to bring about the changes in phases and to consider areas differently from the point of view of the kind of system to be implemented. This is in keeping with the spirit of the 1944 Act which envisaged variety rather than a monolithic system. A preliminary survey of the existing provision of secondary schools was made by the L.E.A. concentrating on the subjects offered in the curriculum both at 'A' and 'O' level of the General Certificate of Education. What was abundantly clear from this survey was the smallness of the teaching groups in the county grammar schools. From the point of view of costs quite clearly the small grammar schools were highly inefficient whatever their other qualities might be. It was not surprising that these schools were eventually amalgamated with the local secondary modern school - if there was one - or the go-ahead given to build new 11-18 comprehensives instead. Many country areas had no secondary provision - pupils still attending all age 11-15 village schools. In the city having a greater density of population and more purpose built secondary modern and grammar schools the options were greater. Undeterred by the Labour government circular of 1965 which listed the options; two preferred, 3 initial; the Education committee and officers

preferred the idea put forward in the 1944 Act which was for common 11-16 schools and a Sixth Form College. The latter was built next door to the Further Education College, apart but on the same campus. The possibility of a county college existed in bricks and mortar if not in name or organisation.

There remained one other interested party which had to be consulted before secondary plans could be finalised, for there were two Church schools, one an old Bluecoat Foundation providing nonselective secondary education for girls, and a more recent mixed secondary modern school - St John's. Whilst the first school is in the centre of town in old sub-standard buildings, the St John's School is on the edge of the city serving a rapidly growing residential area. Separate sex secondary schools were out of fashion nor did they have a place within the comprehensive ideal. The Diocesan authorities in consultation with the Education Committee agreed to close both schools and re-open a new, enlarged 11-16 comprehensive school on the St John's school site. The old school was sold and the proceeds went to finance the expansion programme at Ramsley. The new school was opened in September and at the same time the school leaving age was raised to 16 years, although prior to this forty per cent of pupils had stayed on voluntarily for an extra year in the fifth form. Official notice was given of the closure of the two schools and the process of appointing the staff was begun by the newly constituted governing body. This being the prerogative of the Governors of an aided school. The first appointment was that of the Headmaster. His opposite number retired early. Eventually the senior positions in the new school were notified to the staff and some were advertised locally and nationally. Those short listed were interviewed; appointments being made in part to protect the status and salaries of all teachers who were previously employed by the Authority. Some staff gained promotion, some were outsiders, and everyone was given a job even though it occasionally differed from their original appointment in the old schools.

#### IDENTIFICATION OF A SET OF PROBLEMS ARISING FROM THE EDUCATION COMMITTEE'S DECISION TO CHANGE THE CHARACTER OF TWO SECONDARY SCHOOLS

These changes produced an upheaval in morale, in balance of boys and girls in the school, in the size of the school, in the presence of a split site, in complexity of organisation.

"Then a crisis arises which interrupts the flow of habit and gives rise to changed conditions and consciousness and practice." (Thomas/Schutz : 1971, p 34)

The response from the top was not surprising. A new identity and sense of belonging had to

be created - this was achieved by (i) operating the school as one attempting to overcome difficulties created by split site, (ii) commonly shared symbols and rituals, (iii) a house system based on vertical divisions. These were the means employed by management through its preferred organisational structure to integrate individuals. Cohesion was to be achieved by common identification with the expressive order. The message passing along the communication network had to reach each and every individual - consultation, committees, minutes, brochures, staff handbooks and prospectus became an integral part of this system. The process of rationalisation became more extensive. Previously the schools were of such a size and character that the head teacher could convey sufficient information quickly through full staff meetings or a brief 'chat' with appropriate teacher. This had been replaced with an elaborate structure of roles reflecting the increasingly more complex division of labour. This will be described in some detail in a succeeding chapter. Suffice it to say a greater distance had developed in terms of intermediary positions between headmaster and classroom teacher. Access to the top was less direct as power of decision was more widely distributed. There was nothing unusual in this for staff recruited from large comprehensive schools but for some at the lower level of the hierarchy they experienced a feeling of isolation, frustration and strangeness.

For the professional teacher working in a bureaucratic system there is an inevitable tension arising from a conflict between their position as employees and their professional standards. The role of teachers is given one status by the teacher and another by the bureaucracy in which they work. The extent of teacher participation in decision making highlights this tension. However, studies have shown different adherence to professional values. Some schools allow an unusual degree of autonomy particularly within the classroom. In some areas the reduction of ambiguity provided by rules and regulations is welcomed. (Corwin : 1965, Anderson : 1968)

#### THE CONSEQUENCES OF THESE CHANGES FOR THE INDIVIDUALS AND GROUPS WHICH MADE UP THE SCIENCE DEPARTMENT WITHIN THE LARGER ORGANISATION, THE SCHOOL

In this study the life of a science department is explored. Not by an outsider coming in to participate and observe, but by an insider who shares the task with his colleagues of doing a job, facing the day to day exigencies, subjected to the pressures and expectations of others in the team and in the wider community of the comprehensive school. In this study professional relationships are central. There is a growing interest in the occupational culture of teachers (D Hargreaves : 1975) with reference to subject sub-cultures (Lacey : 1977)

The common staff room is no longer the main arena with the exception of twice termly staff meetings. Now staff congregate around coffee pots within departmental areas having a narrower specialist membership based on subject allegiances. (Appendix) How does this separation affect the members? What goes on in this work group? How are they linked with other groups amongst the staff? The sociology of education needs must research into the actual relations within a school, whether these occur within the classroom, headmaster's office, or the staff common rooms. This then is the primary task.

## **CHAPTER II(A)**

### **ORIGINS OF THE RESEARCH**



## CHANGING CAREER PATTERNS

The decision to investigate the working world of a group of science teachers was made for several reasons. Reasons that have much to do with the researcher's experience as a teacher in the changing scene in a secondary school during the 1980's. How did other teachers who were experiencing these changes perceive, interpret and react to them? How would careers be affected? Career viewed as:

“.... the patterned series of adjustments made by the individual to the network of institutions, formal organisations and informal relationships.”  
(Hall : 1952, p.470)

“.... mobility through a hierarchy of ranked positions (vertical aspect) movement among positions available at one level in a hierarchy (horizontal aspect).” (Becker : 1977, p.165)

In the then divided system of secondary education there was a connection between the background, education and training of staff recruited to the different schools. The grammar schools recruiting graduates with or without professional qualifications, while the secondary modern schools recruiting non-graduate college trained teachers - two distinct teacher communities with different traditions. The 'streaming of teachers' has been investigated in a comprehensive school. (Riseborough : 1981) For graduates who were subject orientated the grammar school offered an attractive career prospect. Staff and pupils were predominantly from the same class, sharing a similar background and set of expectations. These schools and their staff carried unequal prestige arising from differential social acceptance. A grammar school master was held to be socially superior to his counterpart in the secondary modern school. The grammar school provided a congenial place to work, a reasonable income and career. Thus graduates monopolised positions in these schools. This virtual monopoly of one area of secondary education left others to be colonised (Wakeford : 1969) by non-graduates. Likewise, they had built up a career structure with the introduction of scaled posts by the Burnham committee. So graduate masters and mistresses, and non-graduate teachers staffed the schools. Two different kinds of secondary school, one for the selected and one for the rejected. The division between schools and staff were almost complete. What connections existed were limited and tenuous.

As the birth rate rose bulges of pupils passed through the rapidly expanding system. Emergency programmes of teacher training were increased so as to provide teachers to staff the schools. In some subjects, such as the crafts and sciences, there were shortages. Promotion

prospects were good. Staff who so wished could gain promotion to Head of Department quickly and without too much difficulty in both kinds of school.

With the advent of secondary re-organisation grammar school and modern school teachers were brought together in one school, the comprehensive. How were the individual staff nurtured and socialised into different and distinct professional codes, ideologies and practices, to regard each other, and how would they cope with the changed teaching task now facing them? Would the graduate teacher come to occupy the senior positions, in so doing reducing the chances of promotion of the less qualified non-graduate? Would the graduate teacher take only the more able pupils in the upper school, leaving the younger as well as the less able children to be taught by non-graduate teachers, so perpetuating the link between high status master teaching high ability pupil? The division of labour inherent in the old divided system - would it survive?

Perhaps the different experiences of the two teaching groups would merge as each was influenced by the other. Out of this secondary adjustment coming a new conception of the task and the teacher required to perform it. The new and prevailing situation in the school would provide the researcher with the opportunity to study any clash of ideologies and resolution of their different view points. At what points in the setting up of the new science department would such differences become apparent we shall see.

In the time leading up to the merger of the two schools, the structure of posts and above scale payments were announced. Fear was evident particularly amongst senior staff. Those lower in the hierarchy were in some cases content to watch the jostling for positions, or saw it as an opportunity to gain promotion. Loyalty was evidenced when juniors in departments refrained from applying for positions formerly held by senior colleagues. The newly appointed Governing Body and headmaster were bound to offer staff a position by the LEA insisting that all teachers on above scale salaries must be safeguarded.

The whole question of staffing one comprehensive school from two separate staff teams had been shrouded with mystery from the start. At the interview at which the researcher was appointed Head of Science at the St John's School, he had been told that it would become a comprehensive school in 1973. This fact was put forward as an opportunity by the Head and accepted as such by the appointee. Subsequently it was learnt that the two schools would merge. This was a fact that had been withheld. To have known this at the time would have raised questions in the mind of the candidates. Clearly the appointment was for three years only. At the worst the post would be advertised nationally, but possibly one of the two Heads of Science

would come to take over both departments.

Once in the job this situation became clear. The other Head of Science became known, as a teacher of wide experience and a highly qualified graduate biologist. It seemed that she would be the automatic choice. The possibility of the same Head of Science being promoted to the position of Director of Studies did not register. Instead a block in career was perceived. Before becoming Head of Science in the St John's School, I had been interviewed for a Deputy Head's position in a junior school. Middle schools were being developed, perhaps I could develop a career in this direction. My experience of teaching science had extended over many years. If my career was to change direction, it had to be soon, before I was labelled as a secondary school science teacher. Without a science degree I could go no further. Another element in teaching perspective, ie centering on the pupil rather than the subject, would need developing.

## NEW DIRECTIONS: FROM TEACHER TO RESEARCHER

An advertisement appeared in the Times Educational Supplement giving details of graduate studies in education with a possibility of studying sociology as a major component at Lancaster University. Another option was open to me - to study the sociology of education and a course in social psychology titled "The Individual and Group Interaction". This non-specialised course fitted my purposes well, having studied general sociology to 'A' level some years previously. This turned out to be a choice which influenced what was to follow. The ethnographic approach employed within symbolic interaction analysis led to my 'conversion' to this research methodology. As part of my course work for my degree I did an ideographic study of a science teacher. As a way in I used Flanders interaction analysis, the results of which raised some broad questions about teacher/pupil language in the classroom. But the limitations of the method were clear. Frequency and form of spoken language had displaced the intentional element. So by combining two methods I was able to give a fuller description and interpretation of the on-going interaction.

Because I was seconded, this gave me a break and an opportunity to withdraw from the school situation. At the last minute the Governors of the school interviewed applicants for the senior positions. I had applied for the position of Head of Science. It became clear that the Governors insisted on the Head of Science being present during that difficult first year. My application was not considered seriously because I had accepted the secondment and was not prepared to delay it till another year. So I was appointed in charge of Physics and second in charge of the department. At the end of the summer term I gave up office, being replaced by a

teacher whose previous experience had been in an 11-18 comprehensive school in London.

During the course at university, I developed my understanding of social processes and learnt the basic techniques of exploring group life, generating theory, when viewed from the symbolic interactionist perspective.

## STRANGENESS ON THE RETURN OF THE TEACHER/RESEARCHER

On returning to the comprehensive school, I was cautiously received. Naturally friends and colleagues in the old system had built new relationships and clearly the science department had changed in other respects. It was a larger group in a new building, one which I had help design. The Physics was at a low ebb, an imbalance in the staffing had arisen out of the merger. Resources had increased enormously. The Nuffield Physics apparatus ordered during my year of absence had arrived, been unpacked but largely sat unused on the shelves of the store cupboard. My first job was to sort out the Physics department, particularly the arrangement and storage of the Physics apparatus. On top of this I had to learn about the Nuffield Combined Science scheme which had been adopted. Within a year these tasks had been completed.

On my return, I presented a 'low profile' trying to learn more about the new 'set up'. Looking back this was a process of 'casing the joint'. An attempt to assess the newcomers in terms of their attitudes and role relationships, their conceptions of science and the way they saw the present situation. At this stage I had made no conscious decision to explore departmental relationships and emerging culture. So I kept no notes, at least written ones. I was a little more aware and more 'interested' than the average newcomer who simply wishes to establish a place and become a member. This was an attempt on my part to empathise and avoid reference to past patterns which were no more. I was learning a new role and this was kept in the right key. Excursions into past events which had led up to the present situation were dismissed as, 'so much water under the bridge'. My commitment to the department was now lower than it had been previously.

"Commitments are requirements for seeking a goal." (Kornhauser : 1960, p 322)

Partly because my interest was limited to a subject specialism and partly because my new role in the hierarchy did not confer rights of access to various meetings with Heads of Departments, Heads of House, discussions with the Headmaster and Deputy, little information seemed to percolate down through the strata.

In comparison with my previous position, I now felt cut off and alienated. Blauner identifies four dimensions of alienation: (i) powerlessness; (ii) meaninglessness; (iii) isolation; (iv) self estrangement. (Blauner : 1963). Job satisfaction was very much less. At first I felt at a loss but then realised that the release from responsibilities was an extension of freedom. This freedom gained expression both in my attitude to the school and in my free time. I felt under less obligation to conform to standards. More positively, I developed interests outside school which extended to joining a local history society, taking up the clarinet and joining the jazz club, and teaching 'A' level Sociology at the Technical College. My reading interest shifted. Many books on the reading list of my college course, on the 'A' level reading list, which I had been unable to read in the past because of pressure of work were now given priority.

My attempts to secure a full time lecturing post locally were of no avail. The local College of Education was closed as part of the Government's policy aimed at reducing the number of teachers in training. The chance to read for an M.Sc degree at Oxford was frustrated because of the lack of a grant and the necessity to combine study with my job. I began to look for other ways of pursuing my research interest.

The sociology of knowledge had a central place in my thinking. Knowledge incorporated in the school curriculum, knowledge as the possession of a community, knowledge as power, able to transform, knowledge with which to construct a world view.

"participation in the living context of social life is a presupposition of the understanding of the inner nature of this living context."

"Hence the paradox underlying these experiences, namely the opportunity for relative emancipation from social determination ~~increases~~ proportionately with insight into the determination."

"our knowledge of the world is closely related to increasing personal self-knowledge and self-control of the knowing personality - this process of self-extension represents a typical example of the unfolding of every kind of situationally determined knowledge."

(Mannheim : 1976, p 42-43)

How was knowledge compatible? For example a scientist having religious views. This seemed a fascinating area to explore as I was bewildered

"The adaption of the newcomer to the ingroup which at first seemed to be strange and unfamiliar is a continuous process of inquiry into the cultural pattern of the approached group." (Schutz : 1971, p.37)

by the views of a group of people who met privately in each others houses as a group of believers outside of an organised church. Their world was foreign to mine and I wanted to understand what meaning this association had for them. The new Head of Department was a member of this group. A fact which I had stumbled on quite accidentally through an acquaintance of mine.

At this time I wrote to the Open University to see what they offered in the way of post graduate study. On receiving a copy of their prospectus I read it and came across an interest in the Department of Educational Studies in symbolic interaction. Being familiar with the research technique, I realised that access to the life of a group was necessary to do this kind of research. My interest in sectarian religious groups could not be developed then, but my work place offered an ideal field of inquiry. One in which I had access to, one in which I was aware of much of the research literature, and one which could be explored by my preferred research strategy, the participant as observer.

#### FIELD OF ENQUIRY AND RESEARCHER ROLE

At this point in the development of a relationship with the field I set about exploring and mapping the possibilities to see if the project was feasible, and after a period of reflection, produced a research outline.

“What the researcher requires is a working conception of user locales, also the classes of things, persons and events which inhabit these locales. He requires a number of ‘maps’: social spatial and temporal.” (Schatzmann and Strauss : 1973, p 34)

This along with an application was sent to the Department of Educational Studies of the Open University. Later I was invited to go to Milton Keynes to discuss my outline with two sociologists.

It was an informal affair and shortly afterwards I was told that the outline had a chance of acceptance. Twelve months passed before registration was confirmed as a post-graduate student. I didn’t wait about. I began to read deeply and at the same time record the day to day

activities in the department. But before this had got under way I wrote down what I knew of the history of the department trying to fit in the general context of the changing pattern of secondary education. This was an emptying of consciousness.

The present contains and grows out of the past, is retrospective but also is projective, in the sense that future courses of action exist as possibilities.

“... the sociology of knowledge is to link the structures of consciousness to particular institutive and institutional processes.” (Berger : 1977, p 21)

The concept of ‘joint action’ served as an important theoretical lever to prise from reality as experienced by the participants the goals which members strive towards. (Blumer : 1973, p 19)

At first the detailed recording had a wide sweep, trying not to miss out any important elements. The view was a segmental one, from the role position of in charge of Physics. However, in performing this role it brought me in to relationships with many other teachers in the department, but particularly the teacher in charge of Chemistry.

I had been ‘overlooked’ in the eyes of some of the members along with themselves, so I was considered to be one of the staff whose primary allegiance was to those lower in the hierarchy. Using this trust I was able to open up some relationships (Douglas : 1976) and discover those with non-conformist views. The talk here was largely criticisms of those holding senior positions. Not criticism of people but the way they operated to minimise their own task at the expense of others. Giving large difficult classes, difficult laboratories, not backing up staff having discipline problems, etc. Many of these ‘outcasts’ were themselves observers of the scene, having little commitment, whose attitudes ranged from disbelief to cynicism.

There was a division in the department between the St John’s staff and St Mary’s. This separation was reinforced by subject allegiance. The St Mary’s teachers were biologists and therefore tended to interact more with the Head of Department as he was a biologist. Not that he did not keep in touch with the physical scientists. He stayed for lunch and the three teachers in charge of science regularly ate together. This informal occasion enabled me to get to know the Head of Department, his experience at his previous school, his dealing with management, his perception of science and his understanding of comprehensive education. The conversation turned to shared experiences in completing Open University credits. The chemist was in the later stages of completing credits towards the BA degree, whereas the Head of Department had obtained a degree just before he joined the new school. In this we all had

similar backgrounds. My qualifications were considered to be unusual. I didn't apologise for this but jokingly said, 'they were hybrid without vigour'. Their curiosity caused them to probe further. I was 'an enigma' and had become tainted if not impure. Their knowledge of sociology was minimal as their stereotype revealed. It was a confusion of social work and socialist views. My willingness to doubt and question basic assumptions caused alarm. It was necessary at one point to reassure a colleague. My attitude was a respectable scientific one. Had it not been enshrined in Heisenburg's uncertainty principle? A comment understood and appreciated by the chemist.

My records at this stage were reports of conversations, a note on their significance and a note indicating follow up. A method of recording by Schatzmann and Strauss: (i) observational note; (ii) theoretical note; (iii) methodological note. (Schatzmann and Strauss : 1973) In ordinary conversation, at an appropriate time, it was possible to float an idea which I hoped would bring back a reaction. I gained information which contributed pieces to the solution of my puzzle. But chiefly in ordinary conversation underlying beliefs and assumptions go unstated. They have to be deduced from action. Time and time again I wished to break cover and proceed by non-structured interview. I resisted this temptation being aware of fronting out and other forms reactivity could take, instead, trying to use natural talk to prompt expansion on ideas.

So much talk is at a superficial level of niceties, exchanging the time of day, swapping experiences of other facets of the persons life whether that be the family, or activities related to interests - politics, books or TV. It is only when some aspect of the work is not going smoothly or a fracture has occurred in routines,

"Disjunctions and fractures as research opportunities." (Garfinkel : 1967)

that more fundamental and basic assumptions are revealed. 'Garfinkling' is a useful technique in halting a situation and diverting concerns to some object in the social world. The newcomer can get away with this - at first any way.

To the class teacher the problems of lesson preparation, discipline and marking of work



are uppermost. These face the teacher daily and constitute his work a day world. Failure to get spare paper, apparatus, books, disruptions in the daily round are paramount, although trivial to an outsider. This attention to the teaching task pushes into the horizon of consciousness the wider questions to do with departmental organisation and policy making from which he is excluded in large part. I had a distinct feeling that lack of access to heads of departments meetings, the director of studies, and the headmaster, was making my view a myopic one. I couldn't see how my research role could be developed to explore this territory. I wanted to be where the action was. (Goffman : 1969)

After one year of my research, the head of department gave in his notice. Unbeknown to myself he had gained a position as a missionary. I knew of his religious commitment but was surprised that he had decided on this course of action. It wasn't quite so surprising when he told me he was to be seconded for a year to learn arabic, after which he was to take up a position as a science adviser to the secondary schools in Jordan. One day I was surprised by a visit to my laboratory by the headmaster, who told me what I already knew about the head of science leaving. The head asked me if "I would accept the position of Head of Science if it was offered to me". I accepted the job there and then. This news I leaked strategically. A protest was lodged by one of the St Mary's biologists. The Governors reacted by asking for applications for the job from the staff. None were forthcoming. I was interviewed by the Governors and formally appointed. The question of my degree was raised.

"Governors' view (other view not of the 'educationist' ranks) of qualifications for Head of Sciences." (Hughes : 1962)

Why hadn't I studied science? My answers seemed to satisfy the majority and the Head exerted his influence. His action could have been construed as favouritism by some but when viewed in the light of other happenings this was not so. It was convenient and part of his plan to solve problems facing him. I discovered that he had been pressured by the Heads of House to upgrade them, by making one of each House up to scale IV. To do this he had made the second in charge of Science and Humanities to Head of Department. The second in charge posts were eliminated and the salary points used to upgrade the senior House staff. This move was questioned by members of the two departments concerned but his mind was made up and there was no dissuading him. The biologist who had protested about the way the Head had gone about appointing me was angered even more when she learnt that she was not the Head of House to be promoted to scale IV. She considered the promotions to be completely arbitrary and so unfair.

This series of events is important in this research report for two reasons. First I was now in a position to explore the 'upper echelons' of the hierarchy having greater access, so gaining insight into decision and policy making. This shift in role enabled a different but complementary perspective to develop, and was a powerful triangulation method for checking out perceptions registered when occupying another position. (Denzin : 1970) Second, I now acquired a filing cabinet of documents which had been collected and categorised by my predecessor. These enabled me to grasp something of his view, and study papers issued by the Headmaster right from the start of the school.

As well as coming to occupy a different role position this episode serves to illustrate the potentiality of the participant as observer role. This was not to be the only move that I was able to make as we shall see. A fixed role position would have been less revealing. The connection between the field and the researcher is an intimate one and can cause the researcher to go native. (Geer : 1971) It certainly tests resolve and the strength of commitment to the research enterprise; also toleration of a degree of loneliness. Earlier participation in the group had been within a sector of it. The sector connected with Physics. One was bound by subject and space. The three laboratories devoted to Physics were adjoining. Sharing of apparatus brought these teachers together more often. It was true of the other subjects but I did take an opportunity to teach a Chemistry class as this would bring me in contact with other members of the department. Biology was the most removed and from the Physics department poles apart. However through the medium of Nuffield Combined Science more horizontal relationships were established. Again at subject level the three teachers met to discuss a range of topics which were of concern to us all. These relationships were not only horizontal in the sense of communicating laterally but were more concerned with the detail of day to day events and contingencies.

The role of Head of Department was developed making it extensive. Relationships with heads of subject and the assistants became necessary but the basis of the relationship became less concerned with teaching. Integration of the team, interpreting managements' views and explaining organisation requirements became more salient, subject and teaching, less so. Communication tended to be vertical up and down the hierarchy, between classroom teacher, teacher in charge of subject, Director of Studies and Head of Department. One had the distinct feeling that ones performance although not always visible was being scrutinised. The primary and most demanding audience was the department. Ones competence was judged in terms of ability to influence management in their interests. At Head of Department meetings one was made to feel very much the 'new boy' when one didn't 'play the game within the rules already established'. The performances given to these audiences were necessarily different, resulting

in some role conflict. The more senior role enabled more contacts to be made outside the department - from inter to extra departmental concerns. For it was in this arena that decisions were being made which affected the life of the department. The total curriculum of the school represented by distinct groups having differing knowledge and conceptions of reality. The new role facilitated all these things and one more. An overall view of the department based on members' self identity, and perceptions of the department from others outside, led to a recognition of the place of science in the curriculum and the institutionalised means which were employed to combine efforts to achieve departmental objectives.

## A STATEMENT OF THE RESEARCH PROJECT AND WHAT I WAS LOOKING INTO

The aim of this research was to investigate empirically the micro social world of the science department in a newly formed comprehensive school by focusing on teacher relationships in work situations. The insider as researcher observed and recorded interaction with teachers in an attempt to describe and understand by interpretation the meaning action had for individuals as they strategically constructed, sustained or changed their lines of action to achieve individual and group goals. The researcher concentrated at first on teacher perspectives (Hammersley : 1977) and (Hargreaves : 1978) and explored processes affecting individuals in the department. The processes generated were partially understood in terms of the institution although it proved necessary for the larger framework of these processes ongoing outside the institution to be also considered. (Baron : 1981)

At another level the project is a study in the micro sociology of knowledge, for there is a dialectical relationship between the processes leading to the social structuring of the department, and the way this reality comes to be meaningfully experienced and apprehended by the individuals in it. They come together and redefine the work situations and in so doing redefine themselves. (Berger and Luckmann : 1973) Stability and plausibility of the changed reality is thus socially defined and is dependent on the strength of significant relationships through which conversation is carried on and sustained. The closeness and intensity of the social relations in face to face group situations and the significance accorded by members, ensures socialisation through an active collaborative process. Old relationships fade, people change, come and go, former friendships may weaken as new relationships crystallise and come to dominate and give form to the new reality. Old relationships are conversationally dissolved. There is no protection to be found in segregation because powerful groups in the hierarchy support and strengthen the new relationships. Those who attempt to weaken them are avoided and isolated.

For individuals recruited to the department to become a group with a developed sub-

culture the reconstructed definitions of reality must be aligned and matched then internalised. At first, the new self images are precarious but through a process of discovery the individual learns, is supported and comes to accept a justificatory pervasive ideology. (Meighan : 1981) Thus work may be viewed as a 'nomic instrumentality'. (Berger, Kellner : 1977) So the change brought about by the merger of the two schools provided an opportunity for a case study of a group of science teachers having different educational background and teaching experience, identities and ideologies, who come together to plan and organise a science education for boys and girls spanning the whole ability spectrum in a newly designed science block having a wide range of facilities.

Three reasons for concentrating on this area of inquiry must be given to indicate the origins of the research. The first reason concerns the researcher's early education in science and his professional interest in science education as a secondary school science teacher. This education was followed by one in Sociology including a training in research methods through which I developed an interest and later a commitment to qualitative research guided by the collection of concepts making up symbolic interaction theory with its exponents preferred method of inquiry - participant observation. Second, on examining the research literature there seemed to be few studies within my chosen area - teacher relationships. Researches had tended to concentrate on pupil/teacher interaction. The reasons for this are not difficult to find. In schools, in the past, the greater part of the school day was spent by teachers in front of pupils in the classroom. This is still the case today but less so. As secondary schools have increased in size they have become more bureaucratised as the result of rationalisation. This has resulted in a high degree of specialisation within the staff team not only as specialist subject teachers but a host of others to do with management and pastoral care. As teachers come to accept these positions there is a decrease in their classroom teaching load. In this study the Head taught four periods per week, the Director of Studies twenty periods, Heads of Department thirty periods whereas assistant teachers thirty five periods out of a maximum of forty. How is this non-teaching time spent? Much of it is spent on management, organisational and disciplinary matters. Consultations and negotiations with others in committee or informally. Thus the importance of staff relationships if an understanding of schooling is to be gained.

## SOME PRACTICAL CONSIDERATIONS IN CARRYING OUT THE RESEARCH: DATA COLLECTION, TACTICS AND STRATEGIES

Once I had decided to carry out the research I began a feasibility study. This began by raising a set of questions. The most difficult question I had to answer was an ethical one. How could I justify the use of covert methods to explore the working world of the science department? If reliable data was to be collected my operations as a participant observer had to be secret, to avoid ractivity and fronting out. At what point in the research project would the problem become acute? Not at the beginning, because I was already a group member. I held a position as teacher in charge of Physics. Apart from maintaining my cover day by day and resisting the temptation to go native how would it be maintained when I had produced my research account? First of all it is unlikely that the members would come across it in this form. If they did what then? It was necessary to consider this eventuality. Could the account harm individuals or the name of the school. Means of identification must be hidden so that the actors identities remained concealed. Disclosure of any details which do not contribute to the argument could be eliminated. However, no simple recipe or clear cut solution seemed possible. A research bargain as exchange agreement is no guarantee that the account will not be hurtful or offensive to someone. How could I maintain the freest possible condition of reporting?

Permission to carry out this research was given by the Headmaster who expressed no wish to see the account. That his consent was given freely, I took as a measure of his trust and confidence in me to carry out the research objectively, every effort being made to protect the school and avoid impugning the character and integrity of the staff. This tacit agreement I felt bound to respect. There was no problem of gaining entry to the field as I was a member of the staff and the department. A promotion turned out to be my way of withdrawing. In between times, I had studied the life of the department for four years from within. During this period of time, the school and department had changed dramatically, as we shall see.

Other important steps taken to test the feasibility of the project were to submit a research outline to the Department of Educational Studies of the Open University which was successful and begin a more detailed study of the operational methodology of the symbolic interactionist tradition, i.e. participant observation. Library facilities were arranged with the principal of the local College of Education but this was closed down half way through my study. This meant that more books had to be bought and borrowed from the city library and this placed added strain on my work.

Another difficulty I experienced was the 'lone ranger' syndrome. A feeling of loneliness arising from the lack of opportunity to discuss and share problems with others who have similar interests. My chief contacts were my supervisors; the support, encouragement and advice they gave on request helped me to continue my work particularly at those times when things were not going well. M Hammesley, D Smetherham and A Hargreaves were good enough to provide photocopies of some of their own work which overlapped with mine. A conference organised at Swanwick on symbolic interaction enabled me to meet other post-graduate students doing sociological work within the same tradition. The papers emanating from the Ethnography group at the Open University were a continual stimulus.

Unlike other more positivistic research paradigms ethnographers try not to enter the field with preconceived ideas and preformed hypotheses. Instead they expose themselves to the full range of experiences provided by the research situation trying to understand it in the terms of the members. Concepts taken from formal theory are used but these serve as theoretical levers to help begin the exploration. There is no strict formula guiding research. Initially exploration of the field was by taking a broad sweep collecting data particularly the spoken and written word, who the actors were, who they interacted with and where, and the basis of their actions and activities. The first task I set myself was to map the dimension of space, rooms, offices, laboratories, preparation room and dining room, where members of the department met. This led from the idea of locale to that of arena. Not just a place inhabited by a different group but one made up of individuals occupying similar status positions in the hierarchy bound together in a set of role relationships whose activity was directed to a distinct set of concerns and problems. My inquiries into these arenas was made by studying the organisational chart, job descriptions in the handbook, as well as the biographical details (see Appendix I) of individuals such as their qualifications, experience and career route. Although from the position I occupied in the department it was difficult to make much progress in this direction. Relationships with middle and top management were minimal as they were more remote. Communications up and down were via the Head of Department who acted as mediator of the messages. No development in my understanding could be made of this arena (Strauss : 1973) so I returned to a study of teacher perspectives, coping strategies and ideologies of members within the department. The dimensions of which have been outlined by (Hammersley : 1977, Meighan : 1981).

Data collection and analysis was an ongoing reflexive process. Field notes in my diary were organised to recognise these strands in the research web. As data was recorded chronologically it was fruitful to look back in an attempt to discern patterns which provided direction for future data collecting. In this way the researcher was able to focus more sharply on situations

and processes which interested him and showed promise. The concerns of the assistant staff were to do with lesson preparation, schemes of work, marking, report writing, availability of apparatus and books as well as pupil discipline. This was not surprising since thirty five out of forty periods were spent in the classroom or laboratory teaching or performing form teachers' duties. 'Free periods' were treated as such and were spent in one corner of the preparation room where water was boiled for tea and coffee. Conversation in the main was about work, colleagues, pupils or the teaching task. I was able to tape record some of this 'chat' from the departmental office which adjoined the preparation room. Negative feedback resulting in an intrusive sound from the recorder brought one of the staff next door to see what the trouble was! I could put up with this happening once, a second time might have raised their suspicions. An analysis of the content of these recordings revealed their dislike of mixed ability grouping, resource based learning and the method of science teaching termed 'stage managed heurism' as well as the difficulties they were experiencing with lessons requiring a 'circus' of experiments. Using the data collected I learnt how teachers were coping with the curriculum innovation, and what strategies they employed. This formed the major part of my first research report.

My role in the department changed when I was appointed Head of Science. This change in position necessitated a change in intra and inter group relationships, allowing me to gain access to other locales where management and other heads of department met. This included Head of Departments' meetings, membership of the finance committee and informal face to face meetings with the Senior Master, Director of Studies and the Headmaster. There was an increase in the flow of information, including discussion papers, agendas of committee meetings, minutes and papers to do with timetabling, option system and the curriculum. I had been made aware when in charge of Physics that insufficient information was disseminated by the previous Head of Science. To improve matters so that all members of staff received information departmental meetings were begun. One meeting to be held in my office with the teachers in charge of subject, the other in the preparation room for the whole department. The manifest purpose of these meetings was to improve channels of communication for the flow of information; the latent purpose was to focus attention on topics of concern previously identified in my research. The staff quite spontaneously articulated their views, one member wrote the minutes in the 'sixty second book'. When discussion documents were received from management, a summary of the department's view was written and sent to management to acquaint them with the science department's thinking. This example serves to illustrate how the inside researcher can strategically explore the field. In addition to these formal meetings there were informal ones with the Director of Studies and the Head in particular. Following the reception of the

departments first statement of its needs the Head arranged a series of meeting with me in his office to exchange thoughts on the science curriculum. This was a 'sounding out' operation where each explored each others philosophy of schooling.

Promotion to Head of Department and Headmaster enabled me to develop different perspectives based on a different set of actions and relationships. By aligning perspectives and comparing them I had a powerful means of triangulation with which to check out the validity of teacher perceptions in the sub-groups. Further more they provided a means whereby the structure of the whole department and its link to other departments and management could be synthesised. The beginning of this synthesis was catalysed by the acquisition of more data. I acquired a filing cabinet of papers and documents which had been collected and categorised by my predecessor, who recognised the value of keeping well organised files. Even in a school bureaucracy the written word has become a preferred and important means of communication. The file contained a fund of information dating back to the beginning of the new school. One file contained school calendars, which interested me instantly as I had been reading about episodes, phases and cycles in human interaction. By reducing each calendar to its common events I perceived an annual cycle leading to the production of the school timetable. This led me to focus on the structuring of time. The timetable is an important social object in this respect. By working back from the timetable I attempted to trace the stages in its construction and identify those teachers involved. This was done by searching through a set of one academic year's Head of Department meeting minutes. In order, three documents were identified which preceded the timetable, first the curriculum formula, second the option sheet, third the curriculum proposal. When, how and by whom these documents were produced was established. The documents appeared again the following year when I was able to study the stages in the construction of the timetable from the start.

Later I came to realise that time is a scarce resource along with departmental allowance and staffing establishment. The allocation and distribution of these resources was a primary function of management and revealed something of their scale and order of priorities. Through deployment of resources the Head's aims and objectives for the school indeed his philosophy is actualised.

A further promotion to the position of Head of a comprehensive school within the Local Authority provided a third perspective, one that confirmed my earlier beliefs concerning the independence of the Head and his power and influence in shaping the school's curriculum.

So by a process of discovery the significant processes and social objects constructed by the



collective action of the individuals making up the groups and sub-groups in the department and school came to be known. Links between emergent themes were established forming analytical/theoretical structures through the central concept in this study - the curriculum. None of the models described in the writings of curriculum theorists fitted the pattern of processes observed in this study. So by a process of inductive thought using themes which arose from a study of the empirical world of a school science department in a gestalt like way a more grounded model is postulated. This was not the end of the research process for it was then used as a construct to guide further inquiry into gaps and which had up to this time gone unrecognised, or were 'minimally saturated'.

To convey the essential dynamic of the model I have called it the departmental curriculum process. The stages identified in the process were as below:

1. Formulating
2. Implementing
3. Monitoring
4. Evaluating
5. Adjusting
6. Accounting

This apparently straight forward process relates the complexity of persons, events and social objects making up the setting. At first substantive concepts were used as analytical and theoretical levers to help the researcher come to a new understanding of the empirical world. Plausibility of the account was tested by checking on its consistency and symmetry. Triangulation methods served as cross checks of its unity and coherence. The ability of the departmental curriculum to embrace categories and themes was another test of its validity. No negative cases were detected otherwise the process would have been altered to accommodate them.

Writing the final draft account, as a final act in the research project cannot be separated from the matrix of research activities. From the start of the research as acts, actions, sequences and episodes came to be understood data from field notes and documents were written up. These in turn were used to compile research reports which were submitted to my tutors periodically. But during this early stage the wholeness of the department had not been fully grasped. It was not until this happened that the links between major themes could be made. The curriculum theory process identified was the culmination of this thinking. Much excitement was felt when I was able to draft the outline for the final account. I felt re-energised and so was

able to draft the first full account quickly. This involved many hours of work and the solution of some problems. Much of my earlier writing had to be rewritten to create continuity and fit it in with the overall design as the data took on a slightly different meaning.

Writing up involved an effort to create the atmosphere of the department by evoking similar understanding and feelings in the audience of ethnographers through the presentation of participants utterances. Analysis destroyed the wholeness of the experience at first but by presenting significant and telling acts, episodes, incidents and themes, I have tried to create to reconstitute the life of the department as experienced by the members.

But one important question remains. How do the substantive processes described fit in with formal theory? It is difficult and dangerous to generalise on the basis of one case study. Perhaps similar studies in other school science departments should be carried out to identify any differences or similarities. If comparative studies of the sort suggested were carried out then a theoretical model might be constructed on the basis of them, of school science departments or other departments, which would guide further research to understand more completely teacher perspectives, strategies and relationships in the institutional setting of a school, as they come to define what it means to provide an education in science.

## **CHAPTER II(B)**

### **METHODOLOGY**

## THE EMPIRICAL WORLD OF SOCIAL ACTION

Methodology refers to the assumptions, principles and concepts which the researcher accepts and employs to guide the full process of studying the fabric of the empirical world. The intention of the researcher is to describe and explain the pattern of human behaviour of the independent actors. In fact the actions which take place in the setting.

“In Action is included all human behaviour when and in so far as the acting individual attaches a subjective meaning to it . . . . Action is social in so far as by virtue of the subjective meaning attached to it by the acting individual (or individuals), it takes account of the behaviour of others.” (Weber : 1979, p 128)

Action as defined by Max Weber is of four types: (i) rational orientation to a system of ends; (ii) rational orientation to an absolute value; (iii) affectial orientation; (iv) traditional orientation, through habituation. (Weber : 1979)

The subjective meaning’ implies that the individual has a conception of the meaning in terms of the purpose of the behaviour, which can be expressed in language. Because language is a set of conventions shared by a social group it is used to convey meanings which are attached to the sounds and symbols. The meaning of action in the social world can be grasped by the scientist when he becomes aware and gears in to the language of the group.

“All social research must begin and continually return to direct experience as the most reliable form of knowledge.” (Douglas : 1976, p 7)

This is obtained by direct observation of things in their natural state. Such knowledge is the foundation and basis of truth.

Field research involves all forms of study of society in natural situations by means of social interaction. Covert participation field research involves the researcher passing as some kind of member, or in some other way keeping his research activity secret from those being studied. Entering the field with a preconceived plan of observation runs the risk of the researcher imposing his own structure on the world observed.

## THE RESEARCH ACT GUIDED BY THEORY

“Methodology embraces the entire scientific quest and not some selected portion or aspect of that quest. An unavoidable prerequisite for the study of the empirical world is the possession and use of a prior picture or schema.” (Blumer : 1971, p 12)

Theory - suppositions explaining something based on principles independent of the phenomena to

be explained - is speculative. The picture sets the selection and formulation of problems and determines what is data and the kinds of relations between data. The picture is always visible as a set of premises. The beginning of inquiry involves asking questions of the empirical world and the conversion of the questions into problems. The data to be collected is set by the problem and the data required determines the means employed in its attainment. The establishment of connections between the data yield the findings of the study.

Interpretation of the findings carries the scientist beyond the confines of the problem he has studied, since in making interpretations he has to relate his findings to an outside body of theory.

Throughout the act of scientific inquiry concepts play an important role. They are significant elements in the prior schemes that he has of the empirical world, they are likely to be the terms in which his problem is cast; they are usually the categories for which data are sought and in which data are grouped, they become the chief means for establishing relations between data and they are usually the anchor points in the interpretation of the findings.

## RESEARCHERS ATTITUDE TO THE NATURAL WORLD OF EXPERIENCE

The procedure employed in each part of the act of scientific inquiry should and must be assessed in terms of whether they respect the nature of the empirical world under study - whether what they signify or imply to be the nature of the empirical world is the case. (Blumer : 1976) By the empirical world is meant the group life of human beings. It is the world of every day experience, which can be known by the researcher getting close to this life to know what is going on. To be able to do this it is necessary to see their objects as they see them. For people act towards things on the basis of the meaning that these things have for them. Participant observation involves taking a role oneself and proceeding reflectively through one's own role.

It is usual when writing up a research report to devote a chapter to a statement of the assumptions which lie at the base of the research act. (Lacey : 1976) This I propose to do in the belief that it will give the reader some idea of the relationship which exists between himself and the social world. A relationship which develops once the decision has been made that an aspect of his social world is foreign but still sufficiently interesting as to invite exploration. The whole of the research act is about this kind of growing relationship - how it began, developed, was sustained and eventually waned but is never forgotten. The stages in research have a natural history which plot the emergent research role. These stages are worthy of description, must be interpreted and explained for they run parallel to but not separate from the study itself.

If discoveries come to a prepared mind, what is the nature of this preparation? The capacity to pose an interesting question is certainly one characteristic of an informed person. Questions don't arise out of a situation but out of the mind of a thinking person who is reflecting on a real situation. At the back of every question there is an accepted interpretive schema based on shared meanings that are part of the structural elements composing the culture of a group. The simple question 'how' presupposes a collection of concepts to do with magnitude, which are linked to a number system. Or it implies that, desired effects must be caused. To be able to ask this question the person must have a grasp of a set of meanings comprehensible to himself and the person to whom he speaks in answering the question. This set of assumptions enables the person to put forward a theory to explain something based on principles independent of the phenomena to be explained. No one all embracing coherent theory exists in the mind of thinkers, rather different theories are used to deal with different areas of the empirical world. The theories of the physicist are not those of the sociologist but more than this there are different theories within a subject tradition.

#### ASSUMPTIONS UNDERLYING CONFLICT, STRUCTURAL FUNCTIONALIST AND INTERACTIONIST THEORIES OF SOCIETY

Three theories dominate the thinking of sociologists. They are the conflict, structural functionalist and symbolic interactionist theories of society. Each theory has a fairly well defined set of assumptions, ones which differ from each other considerably. Symbolic interaction differs in one major respect from the other two in basing its assumptions on the individual, but building on them to derive a conception of society. Another difference is the emphasis the theory places on stability and the mechanism of social change. (Collins : 1971) But the important property they have in common is their richness in raising questions about ongoing action of individuals and groups which make up the social world. How these theories may be viewed is an important question. Are they contradictory or complimentary? It is a question which has been given much attention and led to internal disagreements. (Davis and Moore : 1970), (Tumin : 1970) This in itself is no bad thing if it leads to a greater appreciation of the place of theory in the scientific enterprise. Epistemological matters whilst important should not be allowed to paralyse the search for truth in its many forms. So the empirical scientist chooses the theory which seems to ring true and the one which is fruitful in the research quest.

#### SYMBOLIC INTERACTIONIST THEORY, SELF, SYMBOLS, INTERACTION, JOINT ACTION AND CULTURE

In this study it is symbolic interaction theory that has been used to guide the investigation of a small work group. Because of the size of the problem it was possible to study individual behaviour

within the group.

Symbolic interactionism builds on the assumption that human beings have selves, which convert the human being into a special kind of actor, one that can perceive himself, have conceptions of himself, communicate with himself, and act toward himself. As these types of behaviour imply, the human being may become the object of his own action. This enables him to interact with himself. Through this self interaction process the actor can reflect upon, judge, analyse and evaluate the things he has designated to himself. By continuing to interact with himself he may plan, organise, construct and monitor his conduct and performance.

As well as indicating to himself through symbols an actor can convey meanings to others. So man lives in a symbolic environment as well as a physical environment and can be 'stimulated' to act to symbols as well as by physical stimuli. A symbol is a stimulus which has a learned meaning and value for members and the individuals response is in terms of its meaning and value. In this sense meaning is the shared understanding of the symbols whereas learned attraction or repulsion is the value attached to the meaning of the symbol.

Language does not simply symbolise an object or situation which is already there in advance: it makes possible the existence or the appearance of that object or situation, for it is part of the mechanism whereby that object or situation is created. (Blumer : 1971)

These symbols are learnt through interaction with other people and are the commonly shared meanings and values. Through symbols men are able to stimulate others in ways other than those in which he is stimulated. Thus symbolic communication is a social process in which the communicator and the attender both contribute to the content of the communication. In communication man can learn many meanings and values and hence ways of acting from other men. So most adult behaviour is learned behaviour. Such an elaborate set of meanings and values - a culture - because it is shared, enables them to predict each others behaviour most of the time and so to plan a course of action, whether this is to co-operate or not. This is social interaction which according to Mead involves both interpretation and definition in ascertaining the meaning of the actions or words and conveying indications to another person as to how he is to act. Through such an exchange process the participants fit their own acts to the ongoing acts of one another and guide others in doing so. It is a positive shaping process in which the participants have to build up their respective lines of conduct by constant interpretation of each others ongoing line of action. Human group life is seen as always incomplete and yet undergoing development, projects leading from one to another. Social disorganisation is to be seen not as a breakdown of existing structure, but as an inability to mobilise action effectively in the face of a given situation. Because social action

continues over time it is recognised as having an historical dimension which has to be taken into account in order for it to be adequately understood.

The symbols employed by a group and the meanings and values to which they refer do not occur in isolated bits but often in clusters, sometimes large and complex. Such clusters of related meanings and values guide and direct an individual's behaviour in a given social setting. A cluster of related meanings and values that govern a given social setting, including the relationships of all the individual roles that are expected parts of it, form the social structure. The self concept of each individual actor is therefore constituted from the roles played in reference groups and emerges from the attitudes others have towards him. In turn one reacts towards such attitudes as an I or Me. The reciprocal relationship can be viewed as one incorporating obligations of self and expectations placed on self by others. Through this reflexive process possible symbolic solutions and other future courses of action can be examined, assessed for their relative advantage or disadvantages in terms of the values of the individual and one of them chosen for action. Through the process of thinking the individual can decide upon a course of action, fit his action to that of other participants in the group. Such a collective act was termed 'joint action' by H Blumer. Examples of such joint action are the collaboration of partners, teamwork, or the extremely complex alignment of a chain of acts of a large organisation. The totality of such joint action in all its variety and different forms makes up the life of a society.

In joint action participants necessarily occupy different social positions and act from that position, in so doing creating a separate and distinctive act. It is the fitting together of these acts and not their commonality that constitutes joint action. How do these acts come to be fitted together? They do so by first identifying the social act as such, and then by defining and interpreting each others action. This is possible because they share a subculture. By identifying the social act the participant is able to orient himself and play his part.

In essence society lies in an ongoing process of action and to be understood a society must be seen and grasped in terms of the action that comprises it. Separate lines of action, whether the participants be individuals, collectives, or organisations is not important. They are only, in so far as their lines of action enmesh with others in the creation of joint action, which as we have seen has a career over time. The emergent pattern is generally orderly, fixed and repetitious as a result of a shared definition of the joint act. The commonly identified definition serves to guide the individual so that his performance fits in with others. In this way regularity, stability and repetitiveness of joint action in social life guarantees regulated social behaviour. There are, however, many occasions when such freely regulated patterns of behaviour do not take place and are disrupted. First joint action is not initiated, is interrupted and abandoned, no common definition exists and individuals



direct their acts on different premises, other considerations enter into the interpretation scheme employed by a participant in the situation confronting him.

A network of interacting individuals with its culture precedes any existing individual. All men are socialised in some significant degree otherwise society when seen as joint action would not be possible. Socialisation is first and foremost into the family and a school culture but subsequently into distinct subcultures as members of a work group. The individual becomes 'habituated' to a sequence of behaviour and events. They are designated and differentiated by image and word into a symbolic system which can be learned and communicated one to another. While old group's cultural expectations, personal meanings and values may be relegated - they become lower in the reference relationship scale - but they are not lost or forgotten. In consciousness there is an integration of newly acquired meanings and values with existing ones. So man's behaviour is a product of his life history, of all his experience both social and individual. (Rose : 1962)

A commitment to symbolic interaction theory has consequences for the research methods employed. The study of action must be made from the position of the actor, by taking the role of the actor in order to see the operating situation as he sees it, when and how he perceives objects interprets and judges them; how he conducts himself and organises things to achieve compliance and reach his objectives. The researcher learns and develops this capacity to take the role of others effectively as he himself has done during secondary socialisation. Group life has the capacity for development and change which can be encompassed by symbolic interaction theory, whether the group relationships take the form of co-operation, conflict or mere routine.

#### ADDITIONAL CONCEPTS, IDENTIFICATION, COMMITMENT AND IDEOLOGY

Symbolic interaction theory is not only based on a set of assumptions but provides a set of concepts which are linked in the mind of the theoretician as a conceptual structure. Some of the key concepts, such as role, action and socialisation, have been described already, others have been added as the theory itself is developed. Three of which play an important part in this study - identification, commitment and ideology.

The term identification was originally introduced by Sigmund Freud into psychology. Identification is not simple imitation but assimilation on the basis of a similar aetiological cause pretension; it expresses a resemblance and is derived from a common element which remains in the unconscious. This idea was later developed by (Freud : 1954) who saw it as having three levels: (i) emotional tie with an object; (ii) a substitute for a labinal tie and (iii) arising out of new perceptions of a common quality shared with other persons. Brofenbrenner has summarised the development of

Freud's ideas on identification as a generalised motive on the part of one person to take on the characteristics of another as a total pattern. (Brofenbrenner : 1960) The product of the identification process is a similarity in the characteristics of child and model. It always involves an emotional tie with an object typically a parent, but later he considered attachment to another person based on learning a dependency relationship, through the fear of loss of love or as a function of fear of the aggressor. Both these processes may operate simultaneously in a love/hate relationship. Identification as imitation of a model is not of the immediate image presented but the ideal standard reflecting the model's aspirations rather than actual behaviour. Identification in the Freudian sense is a motive to become like another. It involves (a) copying overt behaviour, (b) internalisation of motives as well as overt behaviour, (c) accepting the model's aspirations and thus his idealised standards.

Parsons dealt with the content of the identification process but incorporated his ideas under the heading of socialisation which includes these elements in the relationship: (a) permissiveness, (b) support, (c) denial of reciprocity and (d) manipulation of rewards. The outcome is internalisation of not only moral standards but cognitive and expressive features of the parent and through him the culture as a whole. The child passes through a series of identifications governed by the successive roles being taken by child and parent, and comes to learn the segmented, differentiated role of the parent. The clarity of the role model enables the child to identify with both sides of the reciprocal role relationship. Conflict serves to motivate the child to seek a new identity. The type of identification is a function of the developmental capacity of the child. Two elements termed (i) the instrumental and (ii) the expressive, were considered basic to the identification process. The former involves learning to establish the desired relationship to external goal objects, whilst the latter concerns the state of the emotional bond. (Parsons : 1949)

The concept of identification, now it has been taken over, developed and refined by sociologists, is a useful conceptual tool in understanding socialisation into different roles.

"One is said to identify with a social role if one not only internalises the role but adopts it as one's own, striving to attain the necessary skills, and to conform with the role norms." (Johnson : 1960, p.124)

One is also said to identify with a social group and consider oneself a member of it.

H Becker in a comparative study of three groups of students (Physiologists, Engineers and Philosophers) discovered four major elements of work identification during secondary socialisation,

- (i) Occupational title and associated ideology
- (ii) Commitment to task

- (iii) ... Commitment to particular organisation or institutional position
- (iv) ... Significance for one's position in the larger society

Occupational title is a symbol. It names and defines part of a person's work-based identity and has status meaning. Elaborate ideologies - pattern of beliefs and concepts which purport to explain complex social phenomena (occupation) with a view to directing and simplifying socio-political choices facing individuals and groups - itemise the qualities and capabilities of those defined. These properties are valued and people react to their occupational evaluations.

(Becker : 1977) Commitment to tasks involves a feeling that only some sharply limited set of work tasks carried out in a particular way is proper. Thus a conception of legitimate practice governed by an ethical code. Because the opportunity to perform the task exists only within an institution or organisational setting, the importance of building connections with clients and colleagues is necessary - in the maintenance of a successful career. One's standing and position in the wider community, class position and mobility depends on the relation of members of the occupation to society.

What mechanisms are available for the individual to create and develop a sense of identity? First of all by participation in organised groups which affects experience and self image. Whilst participation in group life affords opportunities there are investment costs too. The member is constrained by the norms and expectations which membership involves, interests must be focused and specific occupational skills developed. To produce commitment to the occupational title, an ideology is acquired which has ready made answers to questions about the value of the job. Lastly, through sponsorship and recommendation, which supports upward mobility, trust and loyalty is given in return.

Becker's analysis of occupational identification processes leads the researcher on to the role of the professional within an organisation such as a school. More specifically for this study the network of relationships being constructed and reconstructed by a group of science teachers at their place of work, a comprehensive school. There are two aspects of this matter - the teacher as a professional and the professional within a formal organisation.

Much of the early work has concerned the development of the professional (Tropp : 1957) showing the ambiguity of the teacher's position in society and difficulties in generalising under profession, and has consisted of historical studies. They point to the heterogeneity of such a group in terms of age-range of pupils taught, subject specialism and social origin of the pupils' and teachers' education and training. We shall see that the bringing together of such a diverse group even in a science department has consequences for the education provided in science. It is the

relationships within the school that are central for an understanding of the teacher's occupational role and identity.

The social origin of the occupational group both reflects and is a reflection of the status of the group, and the social origin of the teachers is a reflection of the ambiguity of their status which contains two traditions, the teacher of the rich and the teacher of the poor. Whether these two traditions can become one as the grammar and secondary modern school staff work alongside each other in the comprehensive school, is another concern of this study.

## THE SCHOOL REVIEWED AS AN ORGANISATION

Just as the term 'teacher' is a general one so is the term 'school' - M Weber's ideal type construct which identifies the typical features which characterise an organisation, such as the function which it was established to perform, the pattern of authority and an official body of rules and procedures which are intended to fulfil its function and achieve its specific goals. But alongside this formal aspect there are networks of informal relations and unofficial norms which arise out of the social interaction of individuals and groups working together within the formal structure. Weber's analysis stresses the importance of the system of administration which is typically a bureaucracy. (Blau : 1956) According to him a bureaucracy is characterised by a high degree of specialisation, a hierarchical system of authority, explicit rules which define the responsibilities of each member of the organisation and the co-ordination of different tasks, the exclusion of personal considerations from official business and impartiality in the treatment of subordinates and clients, recruitment of experts and the existence of a career. What is the extent of bureaucratisation in the school in which the science department operates, we shall see. The role of the professional in a bureaucratic organisation is therefore another issue. Does diverging role expectations give rise to role conflict? If so, what strategies are employed to minimise the resulting tension? How do they share in the decision making process and how do teachers guard professional autonomy in the classroom? The decision making process is usually limited to either (i) interpretation of established policy; (ii) advice; or (iii) the execution of established policy. (Corwin : 1965)

Included within the concept of the school as an organisation is the thinking which lies behind the organisation of the teaching group and its size. What are the preferred ways of grouping the pupils - in homogeneous or heterogeneous groups of ability? The consequences of such arrangements has been researched quite thoroughly, not so the reasons teachers give for such practices. Do these have to be deduced from the effect of the system? This seems to be the case, because there is a connection between ability and the occupational eventually taken up, the school grouping

system is the means by which talent can be identified, recruited and mobilised through a contest or sponsorship system. The evaluation of the pupils' performance by teachers and schools becomes the basis for his future status in society. Rather surprisingly how knowledge is selected, organised and assessed in educational institutions (M Young : 1971) including schools has almost totally been neglected by sociologists. Yet any consideration of the organisation of knowledge must take into account the content of education and the relationship between curriculum and authority patterns within and outside the school. This is a vast field for inquiry in which a beginning has hardly been made as yet. The publication of a collection of papers by various authors on the subject under the heading of 'Knowledge and Control' opened up the field. Curriculum, teaching and learning, cognitive styles, social definitions of knowledge all are speculated upon. Bernstein attempts a typology aimed at encompassing within a conceptual framework the degree of control teacher and pupils possess over the selection, organisation and pacing of the knowledge transmitted and received in the pedagogical relationship. (Young: 1971)

In this study of a science department, knowledge of a subject, its boundaries, methods and content are very much to the fore. The extent to which science subjects are insulated from others in the school curriculum but within science itself separate out into specialisms or become integrated. Do subject loyalties - which is an aspect of the collection code - serve to resist changes in the classification and framing of educational knowledge? What would the effect of such changes be upon specialist teachers' self identities and oligarchic subject hierarchies? Would a move to an integrated code challenge the expertise and authority of the teacher in the classroom? (Bernstein :1971)

"The school is a closed system of social interaction which exists wherever and whenever teachers and students (pupils) meet for the purpose of giving instruction." (Waller : 1965, p 6)

Whilst this is a primary role relationship in a classroom teacher's role set, it is not what this study explores. However important the pupil-teacher relationship is, the concept of the school as a system of social relationships includes not only pupils but colleagues on the school staff. It is my contention that these relationships have increased in importance as secondary comprehensive schools have tended to be larger and staff have more diverse functions to perform. The greater ability range of pupils admitted at intake, the increased expectations being placed on the schools, the bringing together of teaching staff having a broader basis of recruitment and previous experience, all necessitate a re-assessment and valuation of the teacher's assumptions about teaching, learning, schools and pupil abilities.

The privacy, independence and isolation of the teacher in his classroom which Waller refers to, may well have been relevant at the time and in the schools which he studied. Is it any longer?

Division of knowledge into subject areas and specialisms, has been added to by specialisation of function, as the formal structure establishes groups of teachers operating as a team, e.g. management team, academic board, academic departments, heads of House within the pastoral care system. How one such group comes to occupy territorially a part of the physical space of the school and a major area of the curriculum is studied. The cohesiveness of the group is influenced by the school's physical and social structure. The group acts in concert when meeting outside groups within the system particularly when time, allocation of funds, human resources, particularly duties and responsibilities are up for discussion and negotiation. This united front may well not be so apparent when the same resources come to be shared within the group. Informal cliques may well compete with one another in an attempt to influence, support or oppose each other. Conflict may well arise between older and younger, senior and junior, graduate and non-graduate, one subject specialist and another over new forms of organisation, procedures or policy. What are the strategies employed by individuals and groups? Can conflict be institutionalised? How is the new entrant to the department socialised into the sub-culture of the group? What are the new meanings and values which have to be learnt? How do they compare with the idealised conception of the teaching role adhered to by the entrant? Becker's study of the socialisation of medical students (Becker : 1961) provides some clues, also (Lacey : 1977) on teacher survival strategies.

Only when studies based on research within the staffroom, departmental common room, office and preparation room, committee, and headmaster's study have been carried out, will a fuller picture be painted of that important part of a teacher's role, colleague relationships. Access to these meeting places is restricted. Entrance is governed by membership and qualification as well as position in the administrative structure. But these spaces are not simply private withdrawal zones, they are scenes where action takes place which affects in some degree or other the collective life together of all in the school.

## **CHAPTER III**

### **SETTING THE DEPARTMENT IN THE**

### **CONTEXT OF THE SCHOOL**

## DEFINING THE EDUCATIONAL CHARACTER AND AGE RANGE OF THE SCHOOL

It is possible for schools of all kinds to explore a variety of types of organisation, of curriculum and of teaching methods on the initiative of local education authorities or of individual school heads or teachers. In the articles of government for county secondary schools in the paragraph titled 'Organisation and Curriculum' this possibility is clearly indicated.

"The Local Education Authority shall determine the general educational character and age range of the school and its place in the local education system."

This of course it did when it was agreed by the Education Committee to implement a plan to set up a system of 11-16 comprehensive schools and a Sixth Form college, which would replace the existing secondary modern schools and grammar schools within the area. St John's School, an aided mixed secondary modern and the St Mary's Girls secondary school were to be dissolved, but a new 11-16 comprehensive school, the Magdalene School, was to be founded on the site of St John's School. The St Mary's building was to be sold and the proceeds used towards financing the building programme required at the new comprehensive school to cater for the increased numbers but also to extend the facilities required for the new school.

Because both of these schools were Church schools and as such have Governing Bodies consisting of two-thirds Church Governors to one-third Local Authority, the Diocesan Board of Education had to be consulted prior to the drawing up of the area plan. This arrangement had been decided upon but was not the only one put forward. Undoubtedly it represents a compromise reached between Local Authority and the Church seeking to safeguard its influence through involvement in secondary education. The Church lobby preferred an 11-18 school but this was inconsistent with the local plan and in any case would have meant there were two Church schools with Sixth Forms in the same city, the other being in a small fee paying direct grant school.

In the second clause of the same paragraph in the articles of government it is stated that:

"The Headteacher shall be responsible to the Governors for the general direction of the conduct and curriculum of the School."

Whilst this indicates the Headmaster's general responsibilities they are given more elaboration in a later clause:



"The Headmaster shall control the internal organisation, management and discipline of the school."

The drawing up of plans still remains the prerogative of the Local Authority, and the control of the curriculum and activities within the school are still very largely under the control of the school itself. For this reason the system has been described as a partnership between central control and local initiative. Once the decision had been made to alter the pattern of secondary education in the area, plans were made to establish the new schools, beginning with the appointment of Governors and Headmaster.

### MERGING TWO TEACHING TEAMS INTO ONE

In the case of the new Church comprehensive school there were two candidates for the Headship. One Headteacher nearing retirement decided to finish on the closure of her school, the other was offered and accepted the post. He was the man on the spot, having intimate and detailed knowledge of one if not both schools. He had been working on the development plan, which had reached an advanced stage. What he lacked was knowledge based on experience gained in a comprehensive school. When the Governors met to consider his appointment it was by a narrow majority that he was appointed.

What were the problems facing the Headmaster? They were many and varied but there is one which is particularly relevant for this study. How was he to deploy staff and resources to build up the new school? In some respects his hands were tied. The school had two sites almost two miles apart. He had two staff teams to make into one. Each staff had a range of teachers of varying age, seniority and status. The Local Authority had guaranteed that no teacher would be unemployed or lose above scale points. This did not mean that their status or functions would not alter. Another associated problem was one of imbalance arising from the fact that there would be many more girls in the new school than boys. Of course they came with a largely female staff but as the intake came to be more evenly balanced in terms of boys and girls, a misfit would occur in the future if there were no staff changes.

The year the new school was founded coincided with the raising of the school leaving age to 16. This had the effect of increasing both the capitation allowance and the grouping of the school. The group of the school determines the salaries of the teachers by stipulating the number of above scale points, and positions at senior teacher and head of department level. With the new allocation, greater chance for delegation and reward to those with extra responsibilities could be given. Undoubtedly the Headmaster had been made aware of the need for an elaborate and efficient

administrative system if the school was to be well organised and managed. At that time there were handbooks and publications produced by the H.M.I.s and Schools Council (Paper 33 Chapter 8) on administration. Experiences of headteachers and administrators in large schools had been set down in print and so with time to read and learn there was a source of information to be referred to. No doubt after much cerebration and discussion the form the administration was to take appeared in an organisational chart.

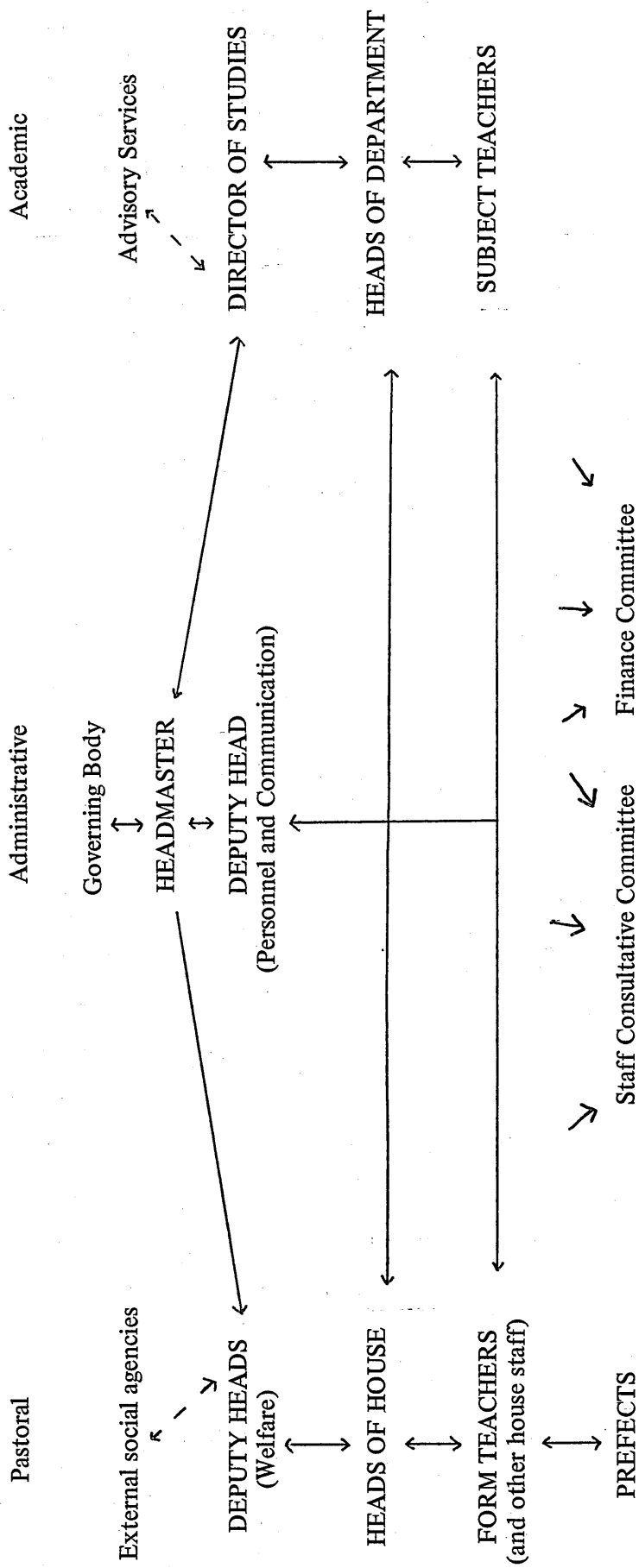
## THE ORGANISATIONAL CHART AS AN ADMINISTRATIVE SOLUTION

This chart may be considered as the administrative solution to the set of problems facing the Headmaster. It is not the only solution, but one which at its inception provided a structure that enabled staff to work together to achieve the aims of the school. These were given on another occasion and in a different place as an

“opportunity to develop talents to the full, develop a personal philosophy of life and develop some interests which will become life long and a basis for leisure time activities and pursuits.”

The chart identifies three spheres of responsibility, one of which overrides the other two. In this sense there is a hierarchy consisting of senior management e.g. the Headmaster, three deputies and senior teachers, the heads of academic departments and Heads of House. The tiers in the hierarchy meet together but separately from the Heads of House who meet under the chairmanship of one or other of the two Deputy Heads, whereas the Heads of Department meet under the chairmanship of the Director of Studies. Within each house there is one male and one female head, each having similar duties, initially both on Scale III salaries. The academic departments were more varied having two things in common only. The Head of Department carried a Scale IV post and had general responsibility for a knowledge area of the curriculum such as the Humanities, Modern Languages or Science. Additionally there was a second in charge of department who deputised for the Head in his absence but also was in charge of one teaching subject. As well as being paid higher salaries all these positions have a reduced teaching load to 75% of the maximum possible. This free time is for administration within the department. The system is an interlocking one for whilst all heads of academic departments are also ordinary members of a House, some of the House staff are in charge of a subject or at least teach a subject within a department. So there are lateral and vertical links giving rise to a network of interlocking roles in the communication network. Nevertheless, commitment to a specific set within the network produces division and non-communication. Within the House system the eight holders of office are on a par and come to act collectively, acting as a forceful pressure group. The strength of their co-operative action can be illustrated by instances where they have swayed policy. A notable instance was when they persuaded the

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Headmaster to upgrade one of each pair of the Heads of House to Scale IV, while at the same time eliminating a Scale III post of second in charge in two academic departments. Their ambitions were kept a secret. They acted together putting their case directly to the Governing Body by letter. Another instance was when the practice of suspension of pupils was not being acted upon, in spite of cases being put forward by the Heads of House. Their unanimous voice made the Head act more quickly and assuredly.

Scale I teachers, usually younger less experienced staff, occupy lower positions in the hierarchy, usually as a class teacher of a subject and form teacher within the House system. They teach for thirty five periods out of forty as well as being responsible for the care and supervision of a class unit. Probationary teachers were excused form teacher duties and certainly had less of the examination work and the more senior and difficult classes to cope with.

## SEPARATION AND ISOLATION OF FUNCTIONAL GROUPS

Because of the size of the staff, the school and so the building, it is difficult for teachers to meet in one place during official breaks and free periods. A loyalty to the small group to which each person primarily belongs becomes the centre of one's work a day world. Such groups provided for individuals support and security, from having an accepted place, and in return allegiance was owed. The teaching group with which a teacher is most involved has the greatest influence. Meetings of members of other groups within the House system, staff consultative group, or staff team were less frequent and more formal, so having little impact. They are peripheral to the real concerns and tasks imposed by the job. Where age becomes a more important basis for group life the younger ones get together informally. This happens where a common interest like canoeing or mountaineering reveals itself over and above subject taught.

## CLARIFYING FUNCTIONS: THE "JOB SPECIFICATION" AND TEACHERS' HANDBOOK

Inevitably as problems arise, are met, various solutions are found. These are recorded in minutes of meetings, but have now been collated in a staff handbook which sets out policy. Foremost amongst these problems are those which could be described as 'demarcation disputes' - whose job is it to do this? 'Did so and so overstep the mark' when he did this? Where a team is employing a strategy in order to achieve its goals it depends upon each member playing their part. Goalkeepers can handle the ball within the area but not centre forwards without penalties being incurred. Such is the case in an organisation. 'Clarification' is the word quite often used, and 'caution' is the policy practiced to ensure the offence of trespass is not committed. This is to emphasise faults in commission, but these were only half the failures. The timid and cautious role player, or the

uninvolved is more likely to commit the offence of omission. Appeals for clarification resulted in the production of 'job specifications'. They were terse and put concisely the functions which role occupants were to perform. They have been written in such a way that they can be construed as covering everything and yet not specifying anything. If a tight description of a job were given this may lead to an interpretation being placed which enabled tasks to be excluded, or this may be seen by some as a stifling of personal initiative. In a complex organisation dealing with young people a finite statement may well lead to inflexibility. Because a school is a changing system 'flexibility' is valued, way and beyond the simple enforcement and interpretation of rules.

The staff handbook first appeared several years after the school was founded; an updated copy is produced each year as data referring to the current year changes. Included in this category are names of form teachers, changing staff and changed appointments. But whilst the organisational structure and role positions appear static, redefinition of roles and changes in the role occupants goes on inexorably.

## LEGITIMATION OF POWER BY DELEGATION OF AUTHORITY

I intend to quote from the handbook so that an impression of the system can be built up. In subsequent chapters we shall see how the rules and roles are made and changed by the individual personalities who interpret and occupy them. The handbook therefore merely marks a stage in development.

".... the school is bound in course of time to make changes both in philosophy and of routine which will make frequent revision essential .... Inevitably there is a lag between the written statement and the working out of ways and means of coping with day to day exigencies."

One theme running through the job specifications is power.

"In identifying areas of particular responsibility it is intended to identify that person to whom others may turn for help and advice."

"It is not intended to create compartmentalised areas of executive power that would destroy the team spirit essential to management of school ...."

"The Headmaster derives his authority from the Governors and it is he who is fully responsible to them for the conduct, organisation, etc., of the whole establishment."

"The responsibilities of all other members of staff are to the Headmaster, either directly or through senior colleagues; they hold their entire authority from him by delegation."

The authority of the official is based upon his position in the bureaucratic hierarchy. The authority of the professional however is based on knowledge. Most important is an acceptance of his legitimacy on the part of the governed. Power is perceived as legitimate if it is exercised according to rules which have been promulgated by a recognised and accepted procedure. Ideologies provide formulae whereby power may be perceived as legitimate. Power is defined by Weber as the probability that an individual or group will be able to carry out its will even against resistance. Legitimacy transforms power into authority, traditionally, charismatically or lego-rationally.

Major mechanisms of ordering and concerting actions are: (i) exchange, (ii) common interests, (iii) consensus - (a) liking, (b) community of belief, (iv) power - (a) influence, (b) authority, (c) coercion. (Weber : 1972)

The Governing Body regulates the proceedings of the school constitutionally. One of its duties is to appoint the Headmaster who is the ultimate authority amongst the staff. His power is legitimated by the nature of his appointment so is accepted by his staff providing it is exercised in accordance with the rules which have been promulgated by a recognised procedure - appointment procedure and contract. This lego-rational legitimation of the process of delegation is defined by the Headmaster as:

“The handing over to another of a defined sphere of authority with power to make decisions within that sphere.”

Hence the preparation of job specifications. It is here that the Head defines his own role taking personal responsibility for: staff appointments, testimonials and references, staff deployment, school finance, Governors' meetings, curriculum planning and timetabling (with Director of Studies) and the School Parents Committee.

## CONTROL AS THE EXERCISE OF POWER

It is through the significant control that he exerts over staff appointments and sponsoring teachers for promotion that he can exert authority. However if a teacher is not career orientated then his control is not so great unless the school is overstaffed and the Local Authority insists on transfer or redeployment. Certainly in this school a teacher was 'encouraged' to look for another job because the department to which he belonged was overstaffed, but others 'knew' that it was more a question of his lack of discipline. (Noise from classroom, unruly behaviour of pupils in class, parental complaints) Whilst another teacher, because she had been overlooked in the 'promotion stakes', refused (not publically) to conform to expectations. Little was done or

seemed could be done. Again, because no new career opportunities were available within the school the teacher remained on the staff making little if any effort to fulfil her role. This took many forms such as not coming to parents' evening, reducing lessons to working out of text books, etc. The Head's suggestions that, 'she should look for promotion elsewhere, review her career, go on a course' were all of no avail. The problem was left buried within the department and not made an issue of.

Power is exercised in other ways. The whole question of resources was vital. Staff are able to achieve their objectives through the resources allocated to the department. This includes the most valuable resource - teachers, but in some subjects the cash allowance as well. In a subject like science which depends heavily on a practical programme of instruction, lack of resources can affect the style and teaching approach adversely, with resulting dissatisfaction on the part of pupils and staff alike. Whilst departments can plea and protest about their own allowance, information is controlled so that no Head of Department knew what any other had been allowed. The whole basis for sharing out resources was hidden. This led to some dissatisfaction not only with receipts but the method of distribution which was based in the opinion of some on the well known method of 'divide and rule'. To refer to an earlier quote: 'It is not intended to create compartmentalised areas of executive power that would destroy team spirit essential to the management of a school.' (Headmaster) Team spirit amongst other things depends on an appreciation of the rules of the game by all its members not just the captain.

#### THE MEETING AS THE INSTITUTIONALISED MEANS OF DECIDING POLICY

The institutionalised means for coming to define policy which is to be carried out is the 'meeting'. As such, meetings have no power of decision but only recommendation.

"Recommendations made will be taken most seriously by those in whose hands the authority lies." (Head)

A line drawn between overall school policy and matters which concern a particular department. Such a division is a reasonable one in most cases e.g. policy on school discipline, since it cuts across any internal divisions, but human and material resources govern pupil contact time, marking load, etc. The danger being that no commonly accepted criteria can be used in making a judgement, rather it depends upon discretion and a trust in management to come to a reasonable compromise.

The meeting is a forum for discussion permitting ideas to surface, be considered, rejected or accepted. Only management carries executive power and even then decisions may well be

decided upon by the Head alone. Liaison is another function of the meetings. In an organisational structure having divisions of labour there is a problem of integration of the sub-units into the whole. The meetings give members time to consider business under review having consulted those before hand who they represent. This is not to underemphasise the opportunity afforded simply to bring members together in a face to face group, who in the normal course of things would not meet. Further it serves to act as a 'damper', to regulate an extreme point of view, or to 'nip in the bud' rumblings of discontent which might be voiced. On one occasion the matter of class sizes was brought up by two Heads of Department who challenged the Head 'to justify the fact that thirty five pupils were in a practical science class whereas in Latin the figure was only eight.' The Deputy defended the Head and pointed out that 'the matter was not on the agenda so could not be discussed.' The Head's plea was that 'he did what he could for all departments, and was keeping an eye on the problem.' He was, 'unprepared to give any idea of the teaching groups throughout the school since, such action would be divisive. It would require a computer to bring such information together.' An offer to do the job failed to get support.

An agenda allows the chairman to control business by excluding some topics and confining discussions to items on the agenda.

Again before minutes were typed and duplicated the rough draft was scrutinised for any contentious comments and edited. The neutralised summary of the proceedings was circulated and filed. In every school committee a member of the management team acted as the censor. The original message is inhibited and cannot pass into consciousness of the whole staff. It will be seen that deputies are instruments of control and as such play an important part in opening and closing the communication network and thus the dissemination of ideas which are disturbing in some way.

## **JOB DESCRIPTIONS AND SPAN OF CONTROL EXERCISED BY MANAGEMENT**

Now I want to turn to the job descriptions of the Deputy Head (Welfare) and the Head of House. A content analysis reveals that the two roles identified, with the form teachers', make a three tier level of responsibility within the pastoral care system. Also that the purpose of this administrative arrangement is to 'know' the pupils. This knowledge of the pupils is through personal file, record card, school report, Quick reports, pattern of absence and illness, participation in extra-curricular activities, membership of teams and societies, late book, interview with parents, contact with primary school, E.W.O., and reports received and sent to other schools. The emphasis here being on involvement in the life of the school, normality in background, and conforming to the expectations placed on the pupil by the moral regime. This knowledge enables the appointed guardians of the moral order to 'understand' lapses in behaviour. Whilst a poor back-



ground is no excuse it can be a consideration which would affect the sanction prescribed. Again such information serves to absolve the school of full responsibility for failure. The plea from the teacher most often heard is, 'what can one expect coming from a home like that'. The bad report prepares the teacher for the worst, so if and when it happens, they are not surprised.

The language in which the welfare roles are couched is moral. Words which have a central place in the vocabulary are: 'tone, appearance, discipline, rules and punishment'. For an organisation like a school to operate in an orderly manner there must be a framework of rules and principles which guide the individual as they are faced with the practical choices arising from day to day existence. Without such an internalised set of principles group life would become difficult. Knowledge of what is expected is built up from birth in the socialisation process but standards vary. The school is setting a standard of behaviour which is required of individuals if they are to live in an organisation. One task of the organisation is to bring all individuals under its control through training. Some of these rules are explicit such as those governing late coming, absence, others such as telling the truth are not. Through the development of conscience, failure to reach the expected standard can lead to feelings of guilt and shame. Whilst in many cases this is sufficient sanction, in others it is not. Not caring whether one is found out is more problematic. In these circumstances the sanctions tend to be harsher resulting in punishment such as detention or corporal punishment - operating to enforce obedience. These measures in many cases are unsuccessful. The same individual repeatedly appears in detention or is caned. Where this leads to resentment and hardening of resistance the final solution is suspension. This is a step reluctantly taken. A report has to be sent by the Deputy (Welfare) to the Governing Body and the Divisional Education Officer. Such action may be construed by superiors as a failure on the part of the school to maintain discipline, and this is indeed one of the functions of the Headmaster contained in the articles of government. Eventually parents are brought in to discuss the breach in school discipline, and the individual is returned to school. In some cases parents write in to the Education Office requesting a transfer to another school and this if agreed solves the impasse of refusing re-admittance.

So the school provides a set of expectations and in return pupils have obligations. The expectations are objectivised in a code of rules which pupils, staff and parents co-operate to maintain. Individual variations are not welcomed. Part of the job in a school is to agree and be consistent in the operation of such rules, so contributing to the tone and ethos of the school projected by the leader.

In growing up, the external system of control becomes an internal one. Using Riesman's concepts, individuals move from being other directed to inner directed persons, through the

opportunities provided by group life within the organisation. Moral learning as such is not timetabled, behaviour is open to scrutiny, judgement, appraisal or disapproval, whether it be in the classroom, corridor, school trip or assembly. In this sense a school as an organisation is a moral order.

Standard of conduct and its oversight is not confined to the pupils' behaviour. The whole staff is involved. The span of control, including conduct of pupils and staff outside class, in the public spaces or corridors, cloakroom, playground, dining room and assembly hall. This is the duty of the House staff - within class the teacher, Head of Department and Director of Studies. When and where infringements take place we shall see that such a division becomes blurred giving rise to difficulties. 'Goodwill' the lubricant of the system ensures the smooth engagement of the gear teeth even when at first out of mesh. Exercise of goodwill shows those who are willing to step outside their role function, use their initiative to the benefit and maintenance of the system. This act does not mean that they will not point out the difficulty at some later time.

In a church school basing itself on the Christian ethic it is not surprising that the pastoral care system is given a place of importance. The school was founded,

"... in the belief that there is great value for all children in an education based upon Christian principles and given in a Christian atmosphere. The school is trying hard to be a truly Christian community and to follow, in all it does, the teaching and example of Jesus Christ. Our first concern is for the full spiritual, mental and bodily development of each child entrusted to us." (School Prospectus)

The governing body is able to select candidates and request a clergyman's reference. They certainly question candidates on Church membership, as well as philosophical and moral concerns to Christians. As a scientist the question of the Theory of Evolution and God was brought up. In the advertisement the phrase, a 'communicant member of the Church of England' or the lesser form, 'in sympathy with the aims of a Church school' was used.

The moral order is endorsed and sanctified daily at morning assembly and termly when the whole House celebrate the Eucharist together. In these rituals the language, music and dress combine to affect the individual. This is intended to build in him an emotional attachment to and acceptance of the moral order of the community. In this the ideals and values become enshrined and sacred, resulting in a high level of legitimacy for pupils and staff alike.

From the organisational chart it can be seen that the Headmaster opted for a dual system of pastoral care running alongside the academic departments. At the apex of the pyramid is the Headmaster and management team who define the aims and objectives of the school, and thus

the shape of the curriculum. By shape, I mean the subjects taught, time allocation, as well as the human and material resources. The Director of Studies was involved in the curriculum planning but was more concerned with implementation than overall philosophy. Statements of such philosophy tend not to be made but they can be discovered by thoughtful examination of the operating curriculum. This will be attempted in a later chapter. The planning process involves staff who have a conception of the task based on their awareness of the views of others. Significant amongst these would be the Schools Council, H.M.Is., parents and the teaching staff and other institutions within the wider educational system. The information received comes from within the educational system, predigested and interpreted. Little if any contact exists with other interested parties within the larger society such as the T.U.C. or the C.B.I. This creates insulation from other agencies and leads to a closed area of debate isolated from wider discourse. Not that the curriculum process is immune from influences at least outside the school. Yet its response is little and slow. The 'dead hand of tradition' whilst moderating radical change, maintains continuity and a sense of stability. An extra subject might be added here to give a bit more choice there. Planning is not from first principles: these are few and they are not generally agreed, and despite all work in curriculum development it remains a question of tradition and conservative values held by dominant groups in society.

This nevertheless leaves the Headmaster and Director of Studies with an important aspect of the planning business. It has got to do with resource allocation. Such an exercise is dependent for its success upon the degree to which all the members of the community accept the aims and objectives of the school. But as we have seen these are not spelt out with any detail. 'Our first concern is for the full spiritual, mental and bodily development of each individual entrusted to us.' Individual teachers of differing subjects would have quite conflicting views as to the contribution their subject could make towards this aim. And most certainly would be prepared to argue about availability of resources to achieve this end, which of course they do. But only within their departments because the opportunity to discuss them elsewhere is denied them. Their views have to be represented upwards through the Head of Departments who are the ones who have access to management. Again what the Head of Department brings to the notice of the Director of Studies is a corporate departmental view. Which can be countered quite easily by saying 'that it must be considered along with other departments' wishes and a balance reached'. We return to the hidden criteria by which resources are shared which is out of the Head of Department's arena. There is some collective bargaining but in the event of deadlock management can enforce its plan and the dissidents are likely to incur some penalties such as loss of privileges, confidence, even resources. These discussions go on informally not in a meeting or a committee. Influence rather than force in arguing a case was more productive. It is an approach which recognises the unequal distribution of power in the situation and accords

status to the senior partner who in return is more munificent.

The staffing establishment for all departments is agreed in conjunction with teaching time and teaching groups; this is the minimum information required by the Head and Director of Studies in producing the timetable. One other important variable is the number of teaching rooms available. Eight laboratories serve ten teaching groups across a year by being divided into equivalent half year groups. Such major divisions necessarily are controlled by management but how the five teaching groups in the half year are arranged e.g. mixed ability, streamed or setted groups, depends upon the internal decision of the department.

The timetable as its name indicates specifies the number of periods allotted to each subject and group, on which day of the week they occur, as well as giving the room and number of staff who are to teach the subject. For teachers it also conveys the distribution and allocation of 'free periods'. A first check on a new timetable includes a free period count as well as a check up on those who are on a par. Then which groups, to see which would be 'easy' and 'hard' days. Any straying from the accepted norm was noticed and could be a source of 'trouble'. An attempt to equalise the work load, which in the science department amounted to every teacher being given some examination work, a share of the older non-examination groups and a mixture of alpha and parallel groups in the third year helped 'keep the peace'. Where it was possible, senior House staff were given their own forms to teach. These unwritten rules guided the business of allocation of staff to teaching group, meeting their expectation of fairness.

## DEPARTMENTAL OBLIGATIONS

The Head of Departments' role is;

"the teaching of the subject area throughout the school within the limits agreed with the Director of Studies. To formulate policies, draw up schemes of work, to oversee the work of the department in detail, to see that the agreed schemes are adequately covered at all stages; to act as leader, continuously reviewing the work, resolving difficulties and being prepared to offer advice; to allocate children to working groups; keep under continuous review best use of funds, consult with colleagues on expenditure, care, maintenance and records of equipment; keep records of pupils' progress and ensure safe working conditions."

The job specification sets down the general responsibilities of the role occupant who is expected to act without detailed guidance. However, as we shall see the means employed for fulfilling his role are still controlled by the expectations of management, teachers in charge of the separate science subjects, and classroom teachers alike.

Most teachers are form teachers as well as teachers of a subject. The school has an eight form entry. Each form is a social group mixed in ability. There are four school Houses. Each House having two forms in each of the five year groups. The House system is based on vertical groups spanning ability and age. Staff in the science department are also members of one or another of the school Houses. The scope of House activities excluding inter-House games and morning assemblies can be seen from this list of form teacher duties:

- (i) To establish a good relationship with children in the form unit.
- (ii) To arrange form prayers.
- (iii) To ensure that the children are clean and tidy and there are no deviations in school uniform.
- (iv) Inform and instruct children in procedures such as arrangements for wet days, absences, fire practice.
- (v) To consult with parents at case conferences and parental interviews.
- (vi) Control and check bad behaviour.
- (vii) To be responsible for academic and personal well being.

As laboratories were used as form rooms most science staff with the exception of those who were Heads of House were form teachers. Science staff objected to being form teachers and to the use of the laboratories as form rooms on the grounds that 'they had more to do in the way of preparing practicals and setting up demonstrations'. However they preferred to be form teachers 'in charge of their own laboratory rather than letting a non-scientist take over'. In this way they could exercise more control over their own rooms, and ensure the children's safety. A probationary teacher would be excused form teacher duties and so would senior science staff. But the attachment to one group of pupils for two years or more 'provided a nucleus of youngsters who you could really get to know well'. This was considered 'an antidote to the anonymity' of a big school.

## **CHAPTER IV**

### **CURRICULAR PROCESSES - FORMULATION**

## ORTHODOX CURRICULUM THEORY IN SCIENCE

The debate about what kind of state secondary education system should be set up in this country is largely over. The latest figures show that over 80% of all pupils of secondary school age are now educated within one or another kind of comprehensive school system. But a debate of another sort still goes on. The subject of the debate is the curriculum. (White : 1973 and Stenhouse : 1975) One definition of the term curriculum is that given by (Kerr : 1968, p.16) as

“all the learning which is planned and guided by the school, whether it be carried on in groups or individually inside or outside the school.”

This broad and inclusive definition captures the meaning well. It focusses on the fundamentals. Foremost amongst them being the responsibility of the school to bring about learning in its pupils. This learning is to be achieved not by chance but through a plan. Thirdly the definition implies that teachers know what must be taught and also how learning can be brought about. Yet it is inadequate in that it fails to recognise the disagreements amongst educators, pupil actions, unintended consequences of the plan, the affect of differing organisational structures and administrative styles - those processes making up the hidden curriculum.

Much early work on the curriculum was piecemeal. (Schools Council : Bulletin 3) Attempts were made to update and improve a subject - say Physics - to make it more attractive and relevant to the young pupil, so that more of them would continue to study a subject and later go forward to the Universities. These developments were within the framework of the prevailing system. As the system changed much of this work failed to have the same validity. Physics was no longer being taught to selected groups of boys by graduates in that subject. The same pattern of development existed for Chemistry and Biology curriculum projects financed by the Nuffield Foundation. Furthermore, the developers of these courses concentrated on the logical structure of the subject to the exclusion of the cognitive and motivational factors central to the pupils' learning. The project workers were unwittingly biased: subject centred rather more than child centred.

It was in the U.S.A. that serious thought was given to revitalising science education. (Bruner : 1969) At a meeting at Woods Hole a number of distinguished scientists and psychologists gathered. They set themselves the task of producing science courses which recognised the structure of the subject but also the needs, interests and mental development of boys and girls. The false antithesis of a subject centred and child centred curriculum was unsupportable.

Other workers became aware and dissatisfied with these earlier developments. They argued that practice without theory is misguided and so set about formulating a theory of the curriculum. One of these theories (Tyler : 1971) which has come to dominate the thinking of many curriculum developers is that originally put forward by Tyler in his classic work 'Basis Principles of Curriculum and Instruction'. The curriculum is conceptualised as a tetrahedron. This geometrical shape provided a structural model which incorporates into a unity four faces of the curriculum: (i) aims and objectives; (ii) content; (iii) learning experiences; (iv) evaluation. The whole is seen as a process, built into which is a feedback loop which makes it dynamic and able to change.

If the findings of this study are accepted then setting up curriculum project teams outside of the school as change agents, is most likely to fail. Indeed, it is difficult to see how they can be successful. It is not surprising that the results of such efforts have been at best disappointing. More recently the Schools Council have switched their efforts to school based curriculum projects, where teachers and curriculum developers work together in the school. (Hoskyns : 1976) Any progress should be coolly credited. The Hawthorne effect alerts us to changes coming from other factors than planned work methods.

The curriculum model put forward by theorists is an abstraction. One abstracted from experience within the empirical world of the school. Not the school viewed as a collection of buildings, although these are significant, but the human beings who together make up the organisation. In an earlier chapter the history and biographical details of one particular school were given, so that the circumstances which existed during the time of the study could be viewed in the right perspective by being located in context. Unlike theorists, teachers in the school have to convert theory into practice. This is not a simple matter of transcription but one of transmutation, a change of form. Owing to limitations imposed by time and space the ideal is transformed into the possible. How is this achieved and by whom?

## AIMS AS ASPIRATIONS - ROLE OF THE HEADMASTER

We shall see that the Headmaster as leader and manager has a conception of the aims and objectives of his school. These he communicates to his staff by word and deed. Through the appointment system he was able to recruit staff with whom to build a team. Together under his leadership, the staff plan, and guide learning. To bring about learning in so many different fields at different stages and rates, specialisation of function resulting in division of labour is necessary. The organisational chart shows clearly the extent and basis for differentiation. It also included the relationship, one to another, of those occupying different role positions, as well as the status accorded within the bureaucracy.



A glance at the organisational chart - which is given in the staff handbook - reveals a division into three areas of staff responsibility: administrative, pastoral and academic. The Headmaster says:

“the purpose of identifying areas of particular responsibility is to identify that person to whom others may readily turn for help or advice. It is not intended to create compartmentalised areas of executive power that would destroy the team spirit essential to the management of the school which is a collection of individual personalities.”

Nevertheless individuals occupy role positions within the organisational system. Authority is handed over to them in defined spheres with power to make decisions within that sphere. The job specification serves to define the sphere.

“... the dichotomy in organisational structure between pastoral and curricular functions causes difficulties - polarising attitudes in the staff group giving rise to tension.” (Richardson : 1973, p 15)

“The recipient of authority by delegation is trusted to put it into operation within the policy agreed with the delegator. This means that full support is given to colleagues who have made decisions or taken action within their delegated authority.”

“The recipient of authority is expected to act with complete loyalty to his senior colleagues, i.e. keeps within the defined authority and within the agreed policy. Difficulties arise if the recipient does not carry out the tasks entrusted to him, is inefficient in carrying them out, or goes outside his defined authority. Supervision of the recipient of authority by his senior must therefore be accepted.”

In a changing situation it may well be necessary to alter spheres of authority from time to time. Where a number of persons are entrusted with parallel authority e.g. the eleven Heads of Department, there are frequent meetings between them to ensure so far as possible an equal level of action and decision making. To ensure that all may have a share in defining the policy which they have to carry out, regular meetings of staff, for exchange of views, are held. For convenience these are subdivided as follows: full staff meetings, staff consultative committee, departmental meetings, House staff meetings.

“It must be remembered that such meetings can have no power of decision, but any recommendations made will be taken most seriously by those in whose hands the authority lies.”

This statement above written by the senior Deputy Head (Personnel and Communications), along with the organisational chart, describes the framework of the administrative structure and process. They are empty in the sense that they do not specify the content of the role or what the processes are. We glean this information from the aims of the school given by the Headmaster but more

importantly from the activities of the teaching staff. In this study it is the Science Department which is of central concern. It is made up of nine full time qualified science teachers, one physical scientist who is also Head of Department, a teacher in charge of Chemistry and another in charge of the Biological Sciences and six other staff. This number changes as staff leave, are replaced or the establishment alters due to a change in pupil population or simply the number 'taking' science. The department is one of several 'taking charge of the teaching of a subject throughout the school within the curriculum limits agreed with the Director of Studies'.

## OTHER GROUPS AND DIFFERENT DEFINITIONS

In this chapter I explore the activities of the Science Department in their negotiations with significant others in the role set, within and without the department, to gain resources, to construct a plan by means of which, the science education of twelve hundred boys and girls in this comprehensive school is brought about. We will see that different beliefs and perceptions motivate the actors. That the decisions arrived at through compromise are often pragmatic and expedient. The idealism of many is reduced, but for those who persevere and learn from the experience provided by disappointment or failure, there is always hope that in the future things will change and get better. 'Adapt and survive' became the motto of the department. (Woods : 1981)

## THE CENTRALITY OF THE DEPARTMENTAL CURRICULUM PROCESS

The concepts of process and periodicity were valuable as theoretical levers to ply from a mass of data one major theme. Categories become integrated with other categories of analysis so building larger theoretical structures each becoming a major phase in the theory of the science curriculum process. These are: formulation, implementation, monitoring, evaluation and modification. These processes are engaged in by different individuals and groups having differing philosophies and powers of action. This is similar to,

"J Irwin's conceptualisation of the stages through which surfing as a social scene has passed: (i) initiation; (ii) articulation; (iii) expansion; (iv) corruption; (v) decline." (Lofland : 1971, p 50)

My file although containing a good number of categories failed to show any obvious connections between them, but a consideration of the events occurring throughout the year had an obvious regularity which seemed a promising pattern to explore. Past calendars of events indicated a sequence not deeply hidden, in fact an annual cycle. I isolated the common events in the sequence for each year and saw that they corresponded closely. The pieces began to fit. I could

see without going any further the framework of the department's activities and how the activities and behaviour fitted together. The simple question I had constantly asked myself when reflecting on the department was, what is this activity all about? It began to yield an answer which gained in clarity as I shuffled papers. The feeling of not being able to see the wood from the trees which had troubled me for some time faded.

My research reports, previously, had failed to comprehend the whole but they stand as a record of my search and the process I identified.

I have called it 'the departmental curriculum process'. For simplification of description the stages have been given names, not that they are discrete or clearly defined stages but are convenient stop off points to break up my account without destroying the continuity and cyclical nature of the action. The stages which have been identified are formulating curricular policy, implementing curricular policy, monitoring implemented curricular policy, evaluating curricular policy and modifying and improving the curriculum.

#### INITIATING ACTION - THE CURRICULUM PROPOSAL AND ENSUING NEGOTIATIONS TACTICS AND STRATEGIES

Formulating curriculum policy had become a managerial activity not confined to the management team, although a member of that team the Director of Studies initiated the activity. Any preliminary discussions at top management level remained obscure. Their thinking must be discerned in the words spoken and written by the members. Each year in January after the Fifth Year Mock examinations and the Third Year final examination before option choices were made, a written curriculum proposal is handed out to each Head of Department usually at the end of a Head of Departments' meeting. Heads of Department are invited to take the written proposal away and discuss it with members of their department. Below is one such example.

##### CURRICULUM PROPOSAL 1979/80

16.1.80

The request is framed so that various categories of pupils' needs are specified.  
The categories are:

- 1 Pupils taking one or more subjects in the department as part of a batch of 9 or 10, all to 'O' level.
- 2 Pupils taking one or more subjects in the department as part of an 'O' level/C.S.E. mixture of 7 subjects.
- 3 Pupils working at a lower level, possibly to a restricted grade examination.

4 The Senior unit (which one hopes can be more propitiously named.

The needs in terms of:

- (a) Number of sets or groups in each year, and if settled, how? (i.e. yearly half yearly and so on)
- (b) Number of periods for each year treating the 4 categories above separately.
- (c) How this time would be best timetabled i.e. double, single, half day, etc.
- (d) Where more than one subject in the department is involved in the upper school, show timetable layout of the various alternatives available.

The next morning before school in the preparation room the teacher in charge of Chemistry enquired of the Head of Department, 'how did the meeting go last night?' 'It was short and sweet', came the reply, 'perhaps we could have a get together over coffee at morning break. I have a paper from RJ on next year's curriculum. Would you look through it and then pass it on to MR so that we can talk it over together?' 'What is in it?' 'The usual blurb.' 'By the look of it she wants us to do her job for her!'

The same day a notice of a forthcoming departmental meeting was posted. On the Agenda was - Curriculum 1979/80. Before this meeting another communication was received from the Director of Studies.

RJ/WH

Have you ever thought of arranging a special course for less able boys (not SLU) compared with Child Care for Girls? It might make Chemistry and Physics groups easier and give a more useful course. An existing Mode III might be worth looking into: everyday Science, scientific living, House maintenance and gardening. Home maintenance and crafts, science for today, environmental science.

Both these proposals were discussed by the science staff at the Departmental meeting. Because the Head of Department had found that reporting back at full departmental meetings was ineffective, it was decided to make written replies. These were more considered, more convenient for the persons receiving them, at the same time providing an accurate record of the department's expressed views. The reports were drawn up by the Head of Department, checked and agreed by the science staff.

Science Department's reply to your suggestion concerning course for least able boys

(12)

- 1 What is the overall curriculum policy for the least able boys? With respect your suggestion seems piecemeal.
- 2 No single teacher able to cope. Perhaps RJ would volunteer as she has experience of a similar course in her previous school. (Design for Living - Mode III at St Mary's School)
- 3 Problems of books/equipment. Simply we do not have the appropriate apparatus or expertise. In Metalwork, Woodwork, Domestic Science, Rural Science and the linked courses at the Technical College, are these pupils not catered for?
- 4 We would be willing to make what resources we have available and contribute in other ways.
- 5 One member of staff dealing with this reduces staff available to teach bona fide courses.
- 6 No one with specific training of such boys (reading age, etc.)
- 7 With capitation recently reduced by 50%/only half ancillary staff, not able to provide or service such a highly practical course in addition to present commitments.
- 8 Laboratories are not appropriately equipped e.g. plumbing, tools, foods, paints, etc.
- 9 The course would have little value in career terms. Miss M/Mr P career staff suggest Physics or at least General Science necessary.
- 10 In the context of other subjects not possible - overlap in Domestic Science, Metalwork, Woodwork and Design.
- 11 Could a new member of staff be recruited to teach such a course from the basic studies department?
- 12 In Physics in the Fourth and Fifth years there are 3 sets, the bottom set are being adequately catered for since a foundation is being laid for craft and technical courses of a vocational nature in Further Education.
- 13 Because of the option system Chemistry gets only sufficient pupils to form two sets, and yet the ability range of the pupils spans the ability spectrum. Very weak pupils are being taught with others having greater ability.
- 14 Whatever course is prepared by the staff for the bottom ability boys will

be taught in an orderly and disciplined way. The occasional protests of those pupils who will not do the work set and conform to reasonable standards of behaviour should be ignored. I would be glad of your continued support and feel in all honesty that to change the course would be wrong at this point when material and human resources are stretched to breaking point.

Hidden within this request was an implied criticism of two members of staff who taught the lower sets in Physics and Chemistry. The criticism originated from some of the most difficult boys in the Fourth and Fifth years, whose misbehaviour had not been tolerated and were dealt with firmly. In an attempt 'to get out of work and stir up trouble for the staff', they had complained to House staff who had passed it on to the Director of Studies. She supported the department in this matter by not pursuing it further. She was very aware of the problems as she taught Biology in the department and had encountered similar challenges from girls. (Information came from HJ - Physics teacher and BG - Head of House)

Summary of the Science Department's discussions on the curriculum proposal received from Director of Studies:

- (i) The first year classes should be of mixed ability. Those boys and girls having reading and writing difficulties be withdrawn to make up the fifth class. The number of pupils in each class should not exceed an average of 24. Each class should have six periods (3 x doubles) each week.
- (ii) The second and third year classes should also be 24 pupils as a maximum. Each class having six periods (3 x doubles) each week. However it should be possible to set for Science preferably across the year but in any case across a half year. This arrangement would enable - at a future date - the specialist sciences to be taught right from the first year. Also individual differences and developmental rate could be allowed for in the teaching. Promotion, relegation, testing of all pupils in the second and third years would be simplified and become more precise.
- (iii) The fourth and fifth years. In view of the difficulties in the construction of a timetable which includes wide choice, the varying needs of different pupils, reduced availability of specialist science staff, the following is suggested:  
that the year groups (4th and 5th) be divided into four sub-groups

Group one consisting of 25 to 30 pupils - the most able, who are capable of studying ten subjects to 'O' level standard. Physics, Chemistry and Biology to be studied by all pupils in this group. Four periods only allocated to each subject, when pupils have followed six periods per week for three years. Unless the group was subdivided then the science courses would have to be inevitably of the traditional kind with limited individual practical work.

The second group would consist of sixty per cent of the year group. These pupils would all study one science but there would be an opportunity to study a second science for those who so wished. Time allocation would have to be ten periods per week - in doubles. That, since there would be a wide spread of ability setting, must be possible for all science subjects, when numbers permit. Otherwise the whole group could be halved, then considered separately. Class size not to exceed 18 pupils per class if the modified Nuffield guided discovery courses are to still be taught.

The third group amounting to twenty per cent of pupils should study technical subjects having a vocational bias, but a scientific basis. The courses should be available at the Technical College or within our own Design Department. We would contribute by backing up the courses. Time allocation - none if five periods completed at the Technical College or by girls doing a Child Care course within Domestic Science Department. Two periods of science per week otherwise. In this way boys would study both Pure and Applied Science. A Mode III restricted examination might be considered. If the course were good enough this might be unnecessary.

Group four (Senior Unit). Because many of these pupils are backward, some ESN, they deserve specialist teaching. We in the Science Department would make available our expertise in Science. We cannot cope adequately with these pupils in teaching terms, only in a Science advisory capacity.

The original proposal put forward by Management sought the Department's views on the Fourth and Fifth year curriculum in Science. However the science staff thought that, 'it could not be considered in isolation from the curriculum of the lower school'. So they interpreted this as, 'an opportunity to convey their requirements for the whole of the five year courses in Science'. Class size was a 'serious bone of contention'. Management had made one concession in the past when eight classes were divided into ten sets. This gave an average class size of 24. But in order to reduce the class size for the 'remove' class of the least able, meant that alpha and parallel classes were much bigger. Also it was heard from a biologist who was a friend of one of the deputies that the September intake would reach 260 so the class sizes for Science in the lower school would be even larger than they had been in the past. As the Health and Safety at Work Regulations imposed a more demanding standard of care in practical lessons, increased class size would aggravate an already difficult situation. Furthermore the examination results in the 'O' level and C.S.E. were considered to be closely connected to the same problem. Comparisons were made with other academic subjects in terms of 'pupil contact time' and those in Science were shown to be very much less favourable. The collective view of the department was that, 'ambiguity existed in the image of Science'. It was considered as an 'academic practical subject'. If the academic side was emphasised the practical aspect was ignored and vice versa. Science was considered as one subject in Years I to III but three or four subjects thereafter. The department knew that the Head preferred separate Sciences right from Year I. So in the department's proposal such an 'unscrambling' of Nuffield Combined Science was tied to this possibility of increasing science time. He was unwilling to consider extra time for lower school while it remained of the Combined Science variety. To ensure that the paper was seen by the Headmaster both he and the Director of Studies were given copies. (Fear of the message not getting through.)

The Design Department had reacted to the initial curriculum proposal very much as the Science Department had but even more so. (Appendix II) They redesigned the whole of the Fourth and Fifth year curriculum on the basis of courses and put their plan on paper. Each Head of Department was given a copy of the plan at the Head of Departments' meeting. The plan was discussed but it was 'dismissed as an unacceptable alternative'.

In the minutes following that meeting this paragraph occurred:

"The meeting expressed thanks to PJ and OM for their efforts. The general feeling was that the scheme would localise rather than widen the subject base; there were too many languages in Course A and too many sciences in Course B; there would be grouping and timetabling problems in certain subjects; Arts/



Science specialisation not desirable at this stage; the 'D' General Course would be a reversion to banding at the lower levels which in the past has been undesirable. The scheme did not meet with any support."

The thinking behind the proposal from the Design Department was not put forward by their Head of Department but two Art teachers. What they hoped to achieve was a system which encouraged and permitted more of the 'brighter pupils' to study Art and Craft courses. This they believed, 'would give more balance to individual programmes and reduce the unnecessary academic burden imposed by ten subjects at 'O' level'. This being the number of subjects studied by the Ex groups. It was thought that 'the courses they had composed would cater more appropriately for a wider range of pupils than the number who attend the Sixth Form College to pursue 'A' levels'.

Why did the scheme not meet with any support? Possibly because it was too radical, requiring fundamental changes in the established timetabling procedure which had, 'worked well in the past'. This was the view of the Head and the Director of Studies. Heads of Department didn't have sufficient time to consider the implications of the plan in terms of rooms, staff, etc. The logistical exercise hadn't been attempted. It was too late in the curriculum cycle to alter things. A system not only existed but was in gear and operating. Teachers tend not to think in this way because it has not been part of their school experience.

The very same meeting but lower down on the agenda was issued the draft of the Fourth Year curriculum for 1980/81. Now everyone would see if their points of view had been accepted or, 'merely listened to'.

## THE CURRICULUM FORMULA IS REVEALED AND DISPUTED

Under the first heading 'A Numbers' on the Curriculum (Appendix III) we see an increase of 14 in the number of pupils entering the Fourth year for 1980/81. This will have consequences for the option system which is adopted, was the Head of Department's first reaction. Under headings B and C, Main Options and Ex band, common core and subject options were displayed.

But at this stage of the meeting - it was approaching five-thirty - thoughts turned to tea and home.

That evening the Head of Department examined the document carefully. Looking for the implications it had for the science department. At that point in time only limited observations

could be made, those which did not concern numbers choosing subjects from the main option groups. The points were jotted down and brought out in discussion with teachers in charge in Chemistry and Biology the following morning.

The first problem was in the Science option group A in the main options. Two hundred and sixteen pupils were to be taught by nine teachers given an average class size of 24. This was assuming that all science staff were available at that time. This would mean that one class would not be in a laboratory - there being only eight laboratories.

Experience had shown that numbers opting in the Fourth Year for Rural Science and Physics, compared with Biology, were low. Inevitably some classes would be well below 24 and others nearer 30. This was something the department had made vigorous efforts to avoid. If the curriculum plan was to stand, modifications would have to be made. The possibilities were: equipping a classroom in the vicinity of the department as a laboratory, appointing another teacher from another department or new to the school, reducing the number in the option group, introduce another non-scientific subject into the group. The alternative which held most promise was the one to reduce the number of pupils in the option group by increasing the number in course Ex. Instead of having one Ex class why not make it two? This would relieve the pressure of numbers and overcome the shortage of laboratories in option A of the main options. It would also enable talented pupils who do not study Latin to be included in an Ex class group. Those pupils in the Ex class who were in set 4 for Mathematics last year should be barred from studying Physics as their compulsory science subject. They should study the other science subject on offer, Biology. The composition of the Ex group had worried the science department. French used to be compulsory for all members of the group. Now French was blocked on the timetable with nine other subjects chiefly craft subjects. This meant that French was taught in small groups to the most gifted pupils, ones who occupied a place in course Ex but to the exclusion of some of the better scientists. This was a 'welcome improvement', if not by the Modern Languages Department.

By blocking across the two bands it was now possible for three sciences to be studied by those in band Ex and two sciences in the main option band. Although there was some restriction on the combination of sciences permitted. Chemistry was made subsidiary to Biology and Physics which 'annoyed' the teacher in charge. One legitimate complaint was that 'Chemistry had been allocated only four periods per week instead of the usual five'. Because it was blocked across the bands this meant that it attracted less pupils but of wider range of ability - Chemistry classes were mixed in ability. This was justified by management because the 16+ Chemistry syllabus was taught. These papers examined the top 60% of a year group.

These points were written down and passed to the Director of Studies. She was glad the department was in agreement with her, and used their support to get the two Ex classes accepted against strong opposition from the Historians. They felt that 'forty pupils out of a total of 256 was quite enough to attempt such a demanding course'. They cited cases of individual pupils who had 'caved in last year when membership of course Ex had been more selective'. The Head thought that 'expectations of the pupils had been too low in the past'. They should be raised. The senior master

"questioned the wisdom of allowing the numbers of pupils in school to exceed provision in terms of accommodation. This would in the long term reduce the quality of the education provided."

An integral part of the curriculum planning process is departmental staffing. The Head provided a breakdown. From this it was clear that he had read and agreed in principle with the departments' estimates of their needs. It will be recalled that in Years I and II, four periods per week were allocated whereas in the Third year six periods per week. In the Fourth and Fifth years there were usually five periods per week each subject.

At a staff meeting at the beginning of the year the Head extolled the virtues of 'the increasing numbers of pupils on roll.' All departments were not in agreement - certainly not the Science Department whose staffing allocation had remained static while the school population grew. So when the department prepared its staffing requirement it was made on the basis of six periods per class in each of the first two years. Although this wasn't recorded on the staffing requirement sheet. On receiving this paper the Head could not agree the figures and called in the Head of Science to explain.

This meeting enabled the staffing to be considered in detail. The department didn't expect an improvement but they were pleasantly surprised. If they had been prepared to split the sciences six periods per week would have been allocated.

#### THE OPTION PROCESS: LIAISON AND CONSULTATION WITH PARENTS - PREPARATION FOR SUBJECT CHOICE

Toward the end of January or beginning of February parents of the Third year pupils are invited to meet subject teachers. Parents who attend, collect their son/daughter's report and by appointment meet to discuss 'progress' or lack of it. At this meeting choice of subjects, whether they can be taken to 'O' or C.S.E. level is the major parental concern. But in

this study it is the science staff who are the relevant actors. Past school reports in science have always been comparative across the year. In the choice of subjects handout notes for parents, (Appendix IV) the meaning of school grades is set against teachers' expectations in terms of 'O' or C.S.E. results. The policy of the department was an open one. After all, the subject was compulsory, so only the question of which science subject remained. All children who had achieved C+ were considered 'possibles' for 'O' level, beginning the course if not finishing it. In more generous times the department had never been 'pressured' in any way over examination entries. On the rare occasion that a parent wishes their child to sit 'O' level against the teacher's judgement this was agreed 'providing the parent paid the entry fee'. This was returned to the parent if the child was successful - some were. But as money was in short supply, as capitation was cut, a new policy was implemented by management. A pass entry ratio was being used to measure the effectiveness of departments. Now this produced a change in attitude. The number of pupils entered for 'O' level fell drastically and 'weaker or lazy brethren, the tail end of the ability range considered capable of grade 5 in C.S.E. were no longer being entered'. This made parents' evenings more difficult affairs. Every effort was made 'to inform' the parents on examination standards, their son/daughter's standard of achievement and what was entailed in the study of the sciences. In careers lessons the pupils had been 'prepared' so that they would make 'sensible' choices having due regard 'to the practical and the possible'. The two sheets (Appendix V) set out the choices available to the pupils, give brief descriptions of each course and notes on standards. They are statements of examination doctrine. One form is for completion by prospective 4Ex pupils, the other for the second band main option choices. These categories were agreed in the 'consultation process' described in some detail earlier.

One of the beliefs at the base of the curriculum is that of every pupil being given 'a broad balanced education'. Broad in the range of subjects studied, balanced in the sense of containing religious, scientific and creative subjects. This curriculum is the same for all boys and girls but tends to differentiate at the end of the Third year. Course Ex concentrate on the academic subjects whereas the middle and low band pupils 'must limit the subjects studied in range and depth'. An emphasis on 'practical' subjects is evident. 'Doing and making things' become a larger part of their weekly work. In this way there is a division between high status knowledge and low status skill which transfers to individual self identity as a lowering and limitation of pupils' expectations. Whilst this process is inimical to a system of contest mobility operating in the school, the damaging affects are mitigated by assuring all of 'their personal worth', in spite of much evidence to the contrary.

## MAKING PUPILS' OPTIONS FIT THE CURRICULUM FORMULA BY 'SHUNTING'

Once the completed sheets are returned to the careers staff, they compile the numbers of pupils opting for the various subjects. These lists are marked against the staff, and number of groups available. Where there is a mis-match the process of 'discouraging and dissuading' pupils from one course to another takes place. The norms governing what is an 'acceptably sized class' come into play. There is often disagreement on these norms outside the department. Various other reasons are given why pupils should be 'shunted' on to another 'track', their grades in the Third year exams, or cases of bad behaviour. By the Third year some pupils have established a 'reputation' one which 'marks them out' as difficult to control. Attempts are made to separate 'trouble makers' so that they cannot come together establishing an anti-culture opposed to the one supported by the teacher and pupils who are in agreement. The problem of discipline of lower sets is recognised so that in the science department smaller classes are always to be found in these sets. They are 'difficult to teach' because they challenge the norms, values and beliefs of the teacher as embodied in his practice. In turn the teacher is 'restricted by the expectations of his superiors'. There is little freedom of action. For a teacher to change his teaching approach to one which motivates his pupils may well be too costly in terms of energy, even if he has sufficient of this and the where with all to direct it.

If the department courses are oversubscribed then 'shunting' may bring about insufficient movement. Other members of staff might be appointed or moved in to the department from others which are not so well subscribed.

The other problem facing the department concerns the distribution of the choices. Are there sufficient staff to teach the Chemistry groups? Who is capable or willing to teach their second science to 'O' level? In this department invariably it was the Head of subject. Junior colleagues however tended to be given lower sets, but once they had 'gained experience' they were given higher sets and their own preferred subject specialism. Senior staff tended to teach more of the senior pupils where 'discipline problems' were greater. However junior sets in the lower school have larger classes. This had come to be accepted practice, an unwritten rule of distributive justice which was not violated lightly. Where and when staffing difficulties arose some decisions were politic rather than just. Management did not subscribe to this norm of 'rough justice' as those in the department did. Their allegiance was more to what was expedient. Members of the department were expected to be able to teach at least two of the specialist sciences, complete interchangeability being preferred. Paradoxically it was the least well qualified who were prepared and capable of teaching more widely. Single subject specialist feeling that 'they were educated to teach their own specialism'.

Boys and girls of the Senior Unit whose achievement in science is very low are not taught in normal sets. During the first year they are in the 'remove' class, in the second and third years in the beta group. These pupils had 'little competence in the 3Rs, little if any motivation or any interest in the subject'. Yet they did 'dismantle objects and often orally were inquisitive'. Interest tended to be 'fleeting and superficial'. The science department's policy was to 'try and improve their work habits, writing, reading, drawing and neatness'. They often resisted and were 'unco-operative'; as they grew older more 'disruptive'. If they could be 'contained that was an achievement'. (Reynolds : 1976)

Many staff in the department 'did not know how to teach these pupils' - there was nothing in their repertoire which seemed to answer their needs. So they were a cause of considerable anxiety. Members of the 'Basic Studies Department' who taught these pupils the basic subjects benefited from small classes. The science department felt that with such small classes these pupils should be 'better behaved and have more skills'. Furthermore, the 'Basic Studies Department' contained some of the most highly paid members of staff and yet the science staff 'were doing the same work with larger groups without this recognition'.

The Head of 'Basic Studies' came to be well known by the Head of Science. A small division room in the Science Department being used for the teaching of the Basic Studies classes. This placed a group of 'difficult pupils' within the centre of the science department which led to 'an extra strain on discipline'. One common topic of discussion was 'the basis for identification of pupils for referral and remedial teaching'. Needs were not really catered for. (Mehan : 1976) Disagreement between Head of English and Head of Basic Studies existed. Head of Science supported Head of Basic Studies because he had found 'little agreement between English and Science setting'. The Headmaster had become aware of these concerns and called the Heads of these two departments together. The outcome of these meetings was a change in policy. The Senior Inspector came in to speak to the staff about this (Heads of Department) which later resulted in this restructuring proposal. (Appendix VI)

What did this proposal amount to? In fact the assimilation of the Basic Studies Department into the total school structure, simply remaining as lower sets across the subject departments. Specialist staff being 'deployed and attached to subject departments, thus avoiding isolation of these pupils from the main stream curriculum, exposing them to a wider circle of pupils and subject experience'. This was no change for the department with the one exception that capitation allowance was now shared amongst surviving departments.

The Science Department was 'insulted' by the fact that the Head of Basic Studies was to be the Science Department's adviser. The Senior Unit however was not the responsibility of SG and so some of the very low ability boys and girls 'could be withdrawn from science option groups'. Yet Mathematics had 'gained' in that their lowest set would be taught by specialist teachers from the Basic Studies Department. Another 'gain' which the Science Department had supported was publication of standardised test scores, and Mathematics and English set for the first year pupils. This became a standard against which to check own setting and grouping. The department was 'gratified' when the system employed by them in grouping first, second and third years had been recommended to the Humanities Department and was eventually adopted. This was further evidence that management 'took notice' of suggestions 'put forward' by the science department. The case, they argued sufficiently cogently was to influence policy not just within but without the department. This recognition encouraged them. By validating their judgement the Head showed he respected the views of the department.

#### FROM FORMULA TO TIMETABLE

The appearance of the pencilled timetable marks the virtual end of these initial curriculum processes. Before going to the printers the details are finally checked. Staff being concerned about free period allocation, Heads of Department with staff allocation and room numbers. At this stage the consultations and discussions with those outside the department are largely over, the outline is drawn, limits have been defined in organisational terms and now the action shifts from one arena to another with a different set of contestants.

## **CHAPTER V**

### **CURRICULAR PROCESSES - DEPLOYMENT**



## ARENA CHANGE

At this point - the pencilled timetable - represents the compromise reached in negotiations about the curriculum process. The divisions of time, such as span; and the allocation of human and material resources for another year are now fixed. The earlier questions posed have been answered or left for another year. Time is pressing and so decisions have to be made, because they become foundations for future action concerning deployment of staff and resources. The discussion/decision process shifts from one arena (Strauss : 1973) to another. From without to within the department. This is a change not only in the group but in the subject of discourse.

The interests of this primary group are most specifically concerned with the knowledge business and one division, science. The members have a dual allegiance based on: training as teachers and subject specialism in which they have been educated. Because of this, centrifugal and centripetal forces are at work within the group, the former being subject identity and the latter preferred teaching style. The latter includes differing views of children's ability as we shall see. Discussions prior to the pencilled timetable have been at a higher level in the hierarchy and so are necessarily more remote. Representation of the science teachers' interests have been made by the Head of Department only, and inevitably the case put forward has been a general one attempting to encompass often conflicting points of view. But who defines the objectives, the content to be taught? Here since the setting up of the Schools Council on Curriculum and Examinations, there have been professional course developers.

"Professional course developers hold 'certain assumptions which neutralise radical possibilities.'" (Gleeson : 1976, p 200)

The acceptance of a particular course often being made without due consideration but reflecting more the power of Inspectors and the LEA to promote a particular scheme by providing financial support and in-service courses. Nuffield Combined Science was fostered in this way. In spite of its shortcoming, it gained in respectability, becoming the new orthodoxy. Failure to accept the new orthodoxy resulted in such teachers being labelled 'reactionaries', 'stick in the muds' or simply 'old fashioned'. They retaliated, by considering the others to be 'with it trendies'. Derisory labelling or simply name calling served to identify different beliefs of the practising teachers providing the basis for conflict. For some, these changes in curriculum and teaching were,

"mere swings of the educational pendulum. If you stay put you are bound to be right some of the time."

Others developed commitments and coping strategies to resist changes in self identity by forming alliances with like minded teachers - cliques, or by disengagement and withdrawal when difficulties arose.

## DIFFERING PRACTICES AND IDEOLOGIES PLACED UNDER STRAIN

In this department the science courses taught have a natural history. Their embryo can be seen in such books as Laybourn and Bailey 'Teaching Science to the Ordinary Pupil', the Unesco Source Book for Teachers, and the Science Master's Book 'Science Teaching in the Secondary School'. An examination of these books reveals the kind of science taught and the experiments done. The topic approach was recommended, science was not divided into separate disciplines, the experimental approach was largely one of demonstration and verification and, much less so, an investigation into natural phenomena. Labelled diagrams and observational work were considered the hallmarks of the scientific method. The knowledge was taught from a utilitarian point of view - the overriding question one had to face if one intended a topic in a syllabus was, 'What use is it?' It is instructive to consider what was omitted from the science courses, 'certainly any mention of science as a human enterprise'. It rested merely in the mention of the great scientists. The cult of the 'individual' and the 'genius' pervades the thinking 'marking off the scientific enterprise from lesser beings'. Scientific knowledge is presented as, 'an unassailable edifice not one constructed brick by brick by working beings'. Again knowledge is divorced from the practical world and questions of existence, business, economics, politics and other social processes. Instead it is given, 'a purity and separateness from reality, one that hints at an underlying idealistic epistemology'. This knowledge is also considered to be the, 'minimum that an educated person should possess'. In the secondary modern school it consists of the work required for the first three years and was to be followed by topics primarily aimed at 'sustaining the pupils' interest'. For the less able pupils it was thought that by 'increasing relevance of the knowledge to day to day existence, and a practical approach, would make the subject matter more acceptable'. Examples of practical and acceptable scientific knowledge are: 'motor vehicle work, the electronics of radio, photographic work'. The emphasis was on 'doing', with no attempt of 'building up a conceptual framework'. This came more from the science courses which were modelled on the scientific enterprise of the research worker. Emphasis switched to 'guided discovery' in the Nuffield courses and an attempt to combine theory and practical work in building up an understanding of the subject. Hopefully, 'establishing some understanding of the great unifying and organising principles which enable questions and hypotheses to be put forward and to the test'. (Atkinson and Delamont : 1976)

Usually the teacher operates on a taken for granted basis without expressing symbolically his *modus operandi*. By piecing together utterances made when the basis of their work is put in question, and more formal statements attempting to justify a particular position, teachers' beliefs are revealed. When the balance of the curriculum and the place of science education in it is raised, the defence mechanisms and ideologies are exposed. Two cases will be cited. One due to a fall in the number of staff arising from the operation of the 'ring fence policy' when the place of science in the common core was brought up for discussion. The other when pupils were 'given choice to vote with their feet' at option time. What reasons were given to attract and maintain able students? From the quoted passage it will be seen that 'value in obtaining a career or as a key to opening doors to further education' is given priority. Only in one case is there 'an appeal to intellectual excitement, to understanding by explaining the world'. Again 'economic factors' are raised to a position of importance above the value of science education has in helping the individual to live in a society having a technological base. Different reasons are given and directed to different audiences in the belief that in this way clients can be maximised so that teacher employment prospects can be maintained and prestige enhanced. Advanced publicity and the virtues of a scientific education is weighed in terms of possible 'rewards in employment and increased opportunities for involvement in the scientific community'.

External examinations have become the means whereby 'paper qualifications certify that the individual has assimilated a meaning structure, which can be extended in vocational terms and provides preparation and grounding for arriving at belief systems'. It also serves 'to make minds accepting and rational'. The danger is that the certificate, as symbol displaces the primary object of the course which is to develop mind, by awakening critical faculties, by providing models for thought. The question which arises is a straight forward one. Does the education in science simply impart facts, (Tulloch : 1976) or does it produce an independent mind willing to apply itself in an analytical or creative way to the universal problems of existence? (Head of Science) How do teachers see their mission? As we shall see, the course of action they take is a resolution of their personality, professional commitment, ideology and situational as well as the social constraints which constitute the material and non-material situation.

The education and school experience of each of the actors although all loosely categorised as science teachers is varied. This leads to disagreement of one kind or another over who does what and how, when and what knowledge should be taught under the heading of science. Specialists within one of the sciences expect to teach their specialism. The variations in education are considerable, ranging from those with a knowledge of only one science even to

'O' level standard to those who have studied all three to 'A' level, one of which has been studied to College or University first degree standard. This kind of background ill fits the needs of the department and the science course which is offered in years one to three which places a premium on the teacher who can teach all three sciences and then one or more to 'O' level standard in the fourth and fifth years. Several ways round this problem were found; the first tried was 'unscrambling' Nuffield combined sciences. Topics identified as Physics and Chemistry and Biology were separated out and given to specialist teachers to teach. This contradicted the whole philosophy behind combined science. The routes through the course recognised no other criteria. Whilst the majority of the content was taught by specialists, classes were in mixed ability groups with one class of remove pupils. To ensure that apparatus was available when the five groups were being taught different routes through the course, sections had to be taken. Sufficient apparatus for all meant that two complete sets for 24 pupils was made available. Each set of apparatus was trayed and labelled using the system: section, subsection and letter giving the experiment. The complexity of the system meant that without reference to a strict programme it was difficult for teachers to 'know where they were'. Errors did occur and sequencing of topics 'did not always follow on logically'. Restrictions arose from limit of apparatus and year group size.

With reduced laboratory technician assistance, availability of apparatus was a serious problem. A technician whose education was limited to Biology meant that teachers of Physics received little if any help. Because 'the apparatus was small scale and devised for individual and group experimental work, this produced problems of organisation within the classroom. Without work sheets guiding the pupils in setting up experiments a way out was found by using demonstrations and class based teaching'. This style of teaching was considered to be, 'more appropriate considering the size of classes, lack of technician help', but did not recognise the fact that the groups were of mixed ability. (Atkinson and Delamont : 1976) and Shapland : 1977)

## RESPONDING TO AN UNFAMILIAR IMPOSED CURRICULUM AND DEPARTMENTAL ORGANISATION

Owing to the fact that two schools' science staffs had been combined there was an imbalance. Predominantly Biologists, Chemistry and Physics teaching was being taught by staff who had no interest in the subject and got round it by under emphasising, in time allocated to Physics. The foundation work in Physics and Chemistry was particularly inadequate 'placing an additional burden on the teaching of the subject in the Fourth and Fifth Years'. Staff soon realised that 'the activity books were little if any value as text or practical guides',

so the experiments set out in the teachers' guides came to be used as a set of experiences linked through the topic of study. Results and conclusions were meant to be based on data and results obtained from the experiments. Where results were inaccurate or inconclusive staff found it 'difficult', let alone the children, 'to understand or conclude anything much'. Often experiments were performed with little if any 'understanding of their purpose'. This uncertainty led to some anxiety. Instead of acting as a drive to self education it led to 'a request' and later a 'demand for a statement of content'. (Berger and Luckman : 1973) This was provided unwillingly by the Head of Department, as it destroyed the so called Nuffield Inquiry approach, but satisfied those who required this solution.

Pressures built up for specialist teaching in the third year largely 'to provide subject experience so that options could be selected'. Again insufficient staff caused by 'ring fence policy', and reduction in staffing quota meant it was impossible to provide staff for Physics, Chemistry and Biology. One solution put forward was to use surplus Domestic Science staff to teach Biology, etc., so releasing Biology staff to teach the separate sciences. The biologists objected and the problem was solved by employing team teaching, a qualified teacher leading two others. This put the responsibility for education in Physics on one teacher for ninety pupils. A work sheet was prepared and practical set accordingly. The Domestic Science teachers helping out, as team leader assistants.

The move to specialist sciences in the third year, including additional topics, placed a time restriction on the science taught in years one and two. Again many topics were 'missed out or inadequately covered'. The objective test book had 'insufficient questions to cover all areas and raised as many questions as it answered'. One difficulty was the fact of comparability. 'Pupils were being examined on different content, a different number of questions.' The marks as a matter of school policy had to be distributed according to the normal curve and grades awarded appropriately. Through a process of manipulation by the Head of Department a fit was brought about. To an outsider all seems well but in fact problems were being masked instead of being attended to. (Stone : 1962)

One defensive argument was that of 'no consultation'. Teachers had been appointed in a particular situation; through no choice of theirs, the situation had changed. They were no longer fitted to teach in the new situation. This of course has its own rationale. Some teachers see themselves as biologists or chemists and are unwilling in some cases to extend their interest and knowledge outside the subject boundary. However, increasingly the choices made by the authorities, within the organisation, define the teacher's role more generally. In arguments over status of science and its specialisms it is at one and the same time considered 'a practical

subject but also an academic subject'. Yet the administration allowed class size of say a Maths class, but expected individual practical inquiry to be the norm. In practical subjects classified as craft, the size of classes were not allowed to exceed twenty pupils. (Postman and Weingartner : 1972) The tension was resolved by using didactic methods of teaching practical work with occasional demonstrations. Still, feelings of unfairness and not teaching as they thought they must, prevailed. Again, because the apparatus was small scale and primarily used for individual and group work, it did not serve as easily visible apparatus for demonstration. The question of practical work bothered the physical scientists more than the biologists. Practical was defined differently by each group. Biologists considered 'drawing diagrams of bones, watching a video cassette recorder, or sorting coloured beads to illustrate the laws of Mendelian inheritance' as practical work. To the physicist using more sophisticated equipment such as strobe photography and accelerated trolleys in a darkened laboratory was practical work. The skill and precision in setting up, with a class of thirty pupils, eventually performing an experiment in a darkened laboratory requires an order of organisation and control difficult to attain. Because there is a failure to appreciate each others problems, which are not visible within the privacy of the laboratory, support is more forthcoming from colleagues facing similar problems. But they look out from their own position casting an envious eye on the simplicity of other's teaching demands, and yet at the same time, taking a pride in their self assured greater competence. In turn, the team views the activities of other teachers when they lose a free period, to take another non-scientific subject. Here size of class is particularly noted which gives rise to genuine grievance. A Latin class of nine pupils, a remedial class of half a dozen, whilst the same children would be part of classes of thirty when they come to science. How are such inequalities in work load explained and justified? They rarely are. Instead they become forms of discontent. In more destructive frame of mind an attack might be launched. On one such occasion a pupil contact time study was sort, at a Head of Department meeting, but in such a meeting the strategy of 'divide and rule' was effectively employed to quosh any such comparative study 'on the grounds that it was devisive and did not further the interests of the children'. These attacks had little short term gain but in the long term the staff in the department rose from six to nine, and the capitation allowance was doubled in a time of increasing financial stringency. These changes came with a change of Head of Department and Headmaster. The morale of all was increased as well as the effort put in to the job. As a 'spin off' the bonds binding the group became less strong, releasing staff to involve themselves more in the general life of the school instead of concentrating their efforts on their own predicament. Their subject was at last valued as they themselves valued it. From this acceptance of self came acceptance of others. (Staines : 1970)

How had these problems come about? There was a direct connection via a chain of events from the merger of the two schools and the appointment of an outsider as Head of Department. To register disapproval he had not received full support from staff in the department. However, had been held responsible for the implementation of the new schemes of work and the deployment of resources. He had been accused of being 'too willing not to rock the boat', and this was put down to his appointment which was considered 'to have been in part due to his religious affiliations'. Whilst there may have been some truth in this it was not the complete story. He did have experience of a large comprehensive school as Head of Biology. He had studied for an Open University BA and completed three credits in two years. It was rumoured that 'this was possible because of absence from school due to an infection of the gut'. The dissatisfaction of the department was expressed frequently in word and deed. The Director of Studies came also to be held responsible for the demise of the department. No concessions were forthcoming, which led to bitter exchanges between the two people, and subsequently a further deterioration in resources.

#### NEW HEAD OF DEPARTMENT - NEW DIRECTIONS

The situation took a turn for the better when a new Head of Department was appointed although initially there were a few disagreements. Personality clash was avoided. Instead outside agencies such as the Science Adviser, the Association for Science Education, and more personal contact with the Head by-passing the Director of Studies proved more effective.

With insufficient time allowed for science and the failure of the team teaching expediency in the third year, it was decided not without resistance, to take three years to teach the Nuffield Combined Science scheme. As the balance of staff changed it was felt that instead of teachers teaching their own subject that everyone was to teach Combined Science. This would enable the sections to be taught as a whole, as originally planned. Simply, there are ten topics, some of which do not recognise subject divisions. If this was to be done more guidance had to be given to individuals in terms of a scheme of work and help. Without this, staff were 'unwilling to engage in the exercise'. A process of personal re-education began (Berger and Luckman : 1973) which broadened the base of each and everyone's scientific knowledge, but more particularly developed a change in emphasis on a neglected area of teaching - scientific method. Science as a process of inquiry and observation became a greater part of science in the school. If this was to be evaluated it was important that the kind of questions requiring scientific thought should be used. Collections of questions on each of the ten sections were written by the Head of Department. They served as a source from which staff could select. This reduced staff work load at examination times and improved attitude to

Nuffield. Whilst the staff welcomed the innovation, they surrendered the right to examine their own pupils. The Head of Department was able to influence and direct the science courses by using kinds of questions which emphasised other things than simple recall e.g. deductive, analytic and synthetic thought. (Phenix : 1964) Rather than scrapping the books of objective questions - they were used in another way. They were integrated within the course as progress tests, practice and revision exercises of understanding, as well as for familiarising pupils in the technique and language style used in scientific tests of this sort which have increasingly come to be used in 16+ Chemistry and C.S.E. science courses.

The planners and devisers of Nuffield Science produced only activity guides. Data was to be built up from the results and conclusions of experiments which through supplementary information provided by the teacher would build up the theoretical framework of the subject. Sadly the 'bringing together of the ideas did not always take place particularly with slower learners'. The need for 'a text book to consolidate and help build up knowledge gleaned from practical work' could not be satisfied in the early days. The work done in class 'did not lend itself to setting homework on a regular basis'. A range of background books 'provided the information in a scattered sort of way', but quite inefficiently. Even with extra funds being made available for text books from the school fund, no such text book was on the market. Advice given to the Headmaster to 'delay expenditure until suitable text books were available' was ignored. Consequently unsatisfactory books were bought which did not relate closely enough to the scheme of work taught. More recently as external pressure from parents and teachers to provide each child with a text book has built up, the publishers have responded. In the separate sciences, e.g. Nuffield 'O' level, a text book has now been marketed. (Hardy : 1976)

Three factors converged and produced a departmental response. When children were promoted they would find that 'some science topics would be missed out, the examination papers had shown that knowledge of facts and principles was often scanty and thirdly the department was being pressured to spend more of its cash resources on books'. The decision was made that 'sets of revision sheets should be prepared'. These would be 'given out before the examination so that the children would have the correct data, results and conclusions which had been woven together to produce explanatory theory'. This considerable task was divided amongst the department, specialist teachers writing the predominantly specialist sections. Section 5 on current electricity was written by a physicist, section 7 on micro-organisms by a biologist. After taking a term for the staff to write the originals, it took a further two terms to get them typed and reproduced. A whole year had passed before the system could be brought into operation.



The school intake amounted to two hundred and forty pupils or eight forms of thirty pupils each. In science, in order to reduce the size of the teaching group, the year intake was divided into two half year groups. These groups corresponded to the House system and included pupils having a range of ability from the highest to the lowest. This was believed to be the case because 'children were placed in their Houses on a random basis unless a family preference was expressed for brothers and sisters to be in the same School House'. These placements were made by the Deputy Heads, in conjunction with the liaison teacher for the primary schools. The subdivision of these half year groups was left to the Academic Department, although the Head and Director of Studies indicated 'their preference for setting'. The new Head of Science being appointed in the Summer term was faced with the task of preparing the teaching groups for September. He was aware of the wishes of management, but particularly aware of a minority of the science staff's wish 'to move away from mixed ability teaching' to a 'streamed' or 'setted arrangement' for which he had some sympathy. Yet he had supported his Head of Department for mixed ability teaching groups previously. He was also aware that departmental meetings had not been held formally, with minutes being kept. So grouping became a topic for discussion in the first Science department meeting. In order to put the discussion on a factual basis a paper was written and a copy issued to each member of staff. The content of this paper was as follows:

- (i) Setting assumes that we know what 'ability' in science is.
- (ii) That we can measure this ability reliably.
- (iii) That the only variable in the teaching situation is children's ability.
- (iv) How can we deal with the child of ability and little effort?

Several options are open. Accept that we are unable to measure ability and leave pupils in mixed ability groups? Accept that we can measure it but with not much accuracy? The latter option was accepted and considered to be better than using setting based on Mathematics and English, assuming a high correlation between science and ability in the basic subjects. Because the school used the curve of normal distribution as the basis for awarding grades, reflecting attainment, it was decided to use the same idea in the science department. There would be a top class of thirty pupils and a smaller Beta bottom class, the children who were more closely distributed about the norm would be in three parallel classes termed P1, 2 and 3. This was the compromise solution, one which we were able to argue with management, and was accepted by them. It is one that was used when parents wrote in about their children's progress. It was one that backed up and was built on the respected and accepted mathematical principle underlying the school's and department's operation - directed resources to the bottom classes in terms of teacher and apparatus, but assumed education came from the teacher only.

This pattern of grouping was employed in years two and three but could not be in the first year and in the initial year of the option course. In the first year the new intake was in many ways an 'unknown' quantity. Indeed there are primary school record cards but they do not 'contain a common standard of measured achievement'. Both in English and Mathematics the children were taught for six to eight weeks and then given an internally constructed test based on this short course. Children were set on this basis not without a number of disputes occurring, coming from staff and parents. A standardised test was introduced as an independent standard. In cases where English and Mathematics results varied widely from the standardised tests, question marks were placed against the names of such pupils. In science another method was used. The problem was of content. It was necessary for groups to start out by different routes through the content of the course set out year by year. It was not until the end of the year that the same content had been covered by all pupils in the year. Then, it was a big assumption because teachers emphasised different topics, missed out topics due to lesson interruptions of one kind or another. This being the case, other alternatives had to be considered. The standardised test results were too late in the term. It was felt and generally agreed 'that we would keep the forms as they are registered in their House groups but remove all those pupils who had difficulty with written work'. In the first week of term when the pupils came to science they were given a short account to write on their last school. The exercise was not given as a test or examination but as a means of getting 'to know' the pupils. The papers were read bearing in mind writing, spelling, sentence structure, vocabulary, general coherence, content and ability to express ideas clearly.

The remove class, unlike all others, was kept small, never exceeding fifteen pupils, but the other classes varied appreciably depending upon the number of children removed. The intention was that these remove classes 'would be taught the same science as the others but given help with spoken and written means of communication'. Underlying that practice is a belief that learning is teacher directed, and neglects the influence which comes from pupils in a class having a wider range of ability.

The third year is another stage in the grouping business, where there is a minor shift from teacher controlled grouping to pupil preference. The wide curriculum prescribed for almost everyone begins to narrow down as pupils look to their futures beyond their present position in the school. A degree of 'guided choice' based on pupils' location in the setting system, information built up in the day to day engagements in the classroom and the self identity or social self constructed. Over ambition is diminished when faced with teacher assessments, grades, reports made over the three years. Other factors than the hard objective one of instrumentality come in to play. Liking, preference, enjoyment, less difficulty, practical

activities, peer group pressures make up a cluster of meanings for the pupils categorised as expressive considerations. Through a process of 'elective affinity' - it is not so much a choice of subject - for through the limiting and cooling out process (Clarke : 1971) choice is unreal - it is more a movement towards peers and contemporaries who have been similarly relegated by the school system to low status position. In their shared position they can operate on a different set of norms and beliefs articulated through participation in the 'delinquent' sub-culture. (Hargreaves : 1970)

The teachers see this differently. The formal procedure which represents their view was described in the previous chapter. Here we are interested to know what happens after a teacher is given a list of pupils who have opted to study their subject for the next two years, possibly to examination standard. Where these figures total thirty or less, one class was formed. Where other totals exceed thirty or some multiple, there is an attempt to round off the figures by 'shedding the weaker brethren'. This is difficult because it means that pupils will have to move sideways into another teaching group. Chemistry occurred at the same time as History. A movement from Chemistry to History can be in principle 'blocked' by the receiving teacher, the parents or career staff. The Director of Studies acts as the go between. Difficult situations can arise, highlighting the contradictions in the individual's and organisational's view points. Negotiation usually overcomes difficult situations. Individual teachers concerned are not brought into the situation and if not resolved 'the first he knows about it is at the beginning of the coming term'. In the hustle and bustle at this time it is likely to get by. Perhaps an extra free period, no form teacher duties, small other teaching groups help to ease matters.

Various tactics are employed in dealing with other situations arising from the option choices and grouping. The third year grades which are for science and not Physics or Chemistry, may be used for setting or not. Sometimes a short course is taught and then boys and girls are setted according to how well they do on the terminal test. In Physics and Chemistry their position in Mathematics and English are used 'to moderate any extremes in placing;' consistency is important here because any discrepant placing is liable to draw attention of other teachers or parents.

The standard package of possibilities is eight subjects including compulsory Mathematics, English Language and Literature, and any one science. This is the so called 'common core' of the curriculum. However it was felt by management that 'a top group amounting to about fifteen per cent of a year could manage ten subjects'. The plan was 'to identify a group of pupils who would be capable of this work load'. At first a list was produced of candidates who had attained two or three grades A's and B's in the Third year tests. The list was marked 'confidential' and circulated amongst the Head of Departments to produce a 'short list'. Many did not oblige,

but added names which were not in the original list instead. Because management were determined to implement the 4x plan and Heads of Department conflicted over which pupils should be short listed, they attempted to objectify the selection procedure by working out a score for each candidate. A grade A was awarded three points, a grade B two points and a C+ one point. No other grades were counted, neither were practical subjects. This produced a second list but instead of thirty candidates it was nearer sixty. In the first year this was attempted, French was included as a common core subject which produced an outcry from the science department. Subsequently, it was shown that many of the pupils in the group particularly girls 'were struggling with Physics and to a lesser extent Chemistry'. The Head was faced with the fact that on a common Fourth year exam pupils not in 4x had come top of the year for science subjects. This fact was 'disconcerting' and was explained by the fact that 'the group was based on verbal facility at the expense of the scientific'. In the Head of Department meeting no spoken support came from the Mathematics department, because they were not restricted in their grouping by the 4x arrangement.

The following year when sixty pupils qualified on points for inclusion in 4x, not surprisingly two groups were formed, one including French as a common core subject, the other without. This example serves to illustrate the point that grouping is variable, but is symptomatic of the policy of the school and its beliefs, as well as the response of the school to expectations arising from outside, amongst the parent and other school population.

## HOMEWORK, MARKING, TESTS AND PROGRESS RECORDS

Preparation or 'prep' for short became a means in the Grammar school for extending the time required to study and learn the ancient texts. This involved learning by heart passages of Latin or poetry which then had to be recited to the master, who checked its correctness, or required its translation. This form of teaching and learning was inimical to a classical education in the ancient Grammar schools. Over time preparation has become homework. Not only has the name of this activity changed so has its form and scope. Homework is a wider term than preparation, although it could still be described as such when the reading of a chapter is set as a preliminary to a detailed study of the content of the chapter. Like lesson time, homework is also timetabled, although the actual time spent on the work set will vary considerably for each pupil, depending on the difficulty of the task, the pupil's ability, availability of a place to do the work, parental support and help. Parents' attitudes to homework (Woods : 1979) vary considerably. There are those who favour 'a couple of hours work set each night' and others who consider it a complete 'imposition'. For these parents there is a clear divide between school and home responsibilities. They

place the responsibility for bringing about development of skill or learning entirely on the school. Otherwise they just expect their children to 'get on with it' and excuse themselves from participation by saying they 'don't wish to interfere' or 'they don't do it the same way as I was taught'. This is to simplify parents' views but for many it would be the truth. Where parents are competent, they not only help, but are prepared to question the validity of homework set, and certainly question a failure to set it, as well as judge it. We shall see that parents and staff are not agreed on the value of homework or the right of schools to expect it.

The school has a homework policy, a standardised one that applies to all subjects. A homework statement by management emphasises the establishment of 'good work habits', independence, and method in organising one's 'work load'. Indeed a lot of rote learning must be done by pupils in all subjects if they are to 'learn their lesson' well. Within the science department homework is problematic. So much of the science teacher's time within class is spent on practical work, whether performing demonstrations or organising individual practicals, 'little if any opportunity exists within the laboratory for marking'. Time is spent on setting out tables of results, calculating values, checking results against accepted standards and deriving conclusions from interpretation of results. This work is aimed at keeping a practical note book of experiments - 'an essential activity in science teaching'. These note books provide a source of homeworks such as 'evaluate a result' or write up the method' or simply 'complete what we did today'. Sometimes a topic is set for research in the form of a project. Often having little direct relevance to the work in hand. More as a means of complying with school policy or parents expectations, which are 'very great when teaching a top set'. To make the work load, coming from homework manageable, practical exercises are set, learning exercises followed by tests, or bouts of revision of work covered. Should the practical book be used for homework? If so will it be brought to next lesson? Failure to bring such a book can lead, and is used by pupils, as a form of disruption. This problem was so acute for some forms that practical exercise books were never allowed to be taken out of class even prior to tests. Some books contain such untidy and poor work that to keep them in class ensured that they remained 'invisible to others' particularly colleagues.

The setting arrangement in a large school is a haven for the non-doer of homework. To 'track him down' depends on good records and a willingness on the behalf of the teacher to pursue the pupil. This is possible when it involves the odd pupil but not so easy when it involves half or more of a class. For science teachers, against school policy, the upper sets tend to be set homework whilst the lower ones collaborate with the teacher in a 'conspiracy of silence'. In return the teacher expects the pupils to co-operate in class. It is an uneasy

truce (Reynolds : 1975) which can 'come to grief'. Yet it is one element in the survival strategy of an overloaded teacher. The management team expect teachers 'to set homework, it is the responsibility of pupils and parents to see that it is done'. This was for a time a satisfactory arrangement, for all sides, but the status quo was broken when unbeknown to the staff a questionnaire was sent to a number of parents in the first year. The results were presented at a Head of Department meeting.

The Deputy Head who put the questionnaire was reminded of 'the responsibility of the pupil and parent' as earlier described. Later management revealed their plan to introduce homework books in the first year which had a space where a parent was invited to comment and sign. The solution to this was that staff kept a record in their mark register of the homework set, others almost abandoned practical work and reduced science to a note making and taking exercise. These are some of the methods employed by the teaching staff to fulfil the expectations placed upon them by parents, management and colleagues. There is no single view on homework. Different views indicate position in the hierarchy and personal definitions of role performance. In teaching as in other jobs, it is difficult to determine the limits of the task and conflicting definitions arise. In the end it is a matter of personal standards, arising from form and strength of commitment. We have seen some of the well tried methods of coping but there are others which relate to marking. One pragmatic solution is to reduce the amount of marking by limiting free writing, by substituting dictated or blackboard notes. 'The content will be accurate. Each child will have a set of notes to revise from.' Typed notes, more time spent on discussion again reduce the marking burden. Calculations can be marked together in class, so can one word answers and objective tests, or the pupils themselves can be co-opted as markers. Content accuracy is important - in science practical books it is usual for a teacher to give the heading and write the conclusion. The method is left to the individual pupil. In marking such work checking that these correspond is all important. To explain a lack of correspondence to an irate parent is difficult especially when the work has been ticked and given an 'impression mark' of eight out of ten. To excuse oneself from responsibility for English is another tactic, or perhaps to write encouraging remarks at the bottom piece of the work to increase effort put in. Appearances are all important. Work must be presented with date in the right hand corner, a full title underlined, the exercise ruled off. Writing must be in ink and legible, neat and tidy.

These are but some of the ways that work set, work done, becomes acceptable to the audiences observing the act.

## **CHAPTER VI**

### **CURRICULAR PROCESSES - MONITORING**

## CONTROL OF SELF AND OTHERS

The monitoring process is a distinctly human one and is basic to any and every form of social action. Individuals can interpret the meaning and value objects have for self and others. In this way his own utterances and actions can be directed to communicating his intentions or working out his own plan of action. By being aware of the other's understanding he can use the means at his disposal to bring about or attain his goals.

A more specific meaning than that conveyed already is meant. Monitoring involves control to ensure that operations are carried out in accordance with the plans formulated to achieve objectives. Where the individual agrees with the means and ends, his course of action is of a particular kind and his relationship is a voluntary one. Involuntary action occurs where either or both means and ends are disputed. This is less likely to happen when the objectives and means for their attainment have been agreed by joint action. This is not the same as consultation, which is a sounding out procedure seeking information and advice which is not bound to be accepted or acted upon.

Voluntary action through co-operation indicates an agreement of means and ends but more importantly a convergence of interpretative schema based on common acceptance of a cluster of meanings. Co-operation comes from an identification and involvement with, and a willingness to work together, which gives rise to a feeling of 'at oneness' from which satisfaction in membership of a team having a common purpose is derived. Whether the action of members of the group is voluntary or involuntary there is a degree of coercion which arises from the imposition of the policy as well as the power of certain members to supervise others, e.g. entering classrooms. This power is accepted as authority through the appointment to office, competence of the holder, impartiality in dealing with colleagues lower in the hierarchy and the trust which the leader has in his team. The leader's performance is monitored; so through reciprocity the group is bound together.

So each monitors own and other's performance. Of course this implies a standard by which to judge. Whilst each actor has his own standard which comes from reference groups these are submerged into a new standard based on the norms evolving in the operating department - the pragmatic standard being faced with a task and getting on with it.

We must now ask the question, what is monitored? It must be the teaching programme in science, which is not a given, beyond accepting that Nuffield Science, Physics, Chemistry, Biology and Human Biology are taught in partially setted teaching groups. These programmes



are routes arranged through teaching content and situations. The sequence is given either in Nuffield science sections I to X or in the syllabus. There is no freedom for individual teachers to alter the sequence but within any terms' work freedom exists. Even so Nuffield sections are already sequenced by topic and experiment. 'No topic should be omitted as the pupils will be handicapped in the examination'. The questions set cover all topics within a section. The set examination papers go some way to ensure that teachers cover the work giving equal emphasis to elements of Physics, Chemistry and Biology. Some, possibly most, teachers conform to the Head of Department's expectations, others simply choose the topics they wish to teach and use only those questions set on the topics covered. In doing so they contravene departmental policy, risking colleague criticism next year when gaps in knowledge of the pupils is discovered. For a class is taught by a different teacher each year. The examinations do not simply examine content. Meanings are built in to the papers. Whilst factual recall is given a place, devising experiments, sorting out data, analysis and synthesis are included. Through tests the Head of Department was able to convey his understanding of what science is about.

- (i) Place the following units of length measurement in order of increasing size. Metre, decimetre, nanometer and millimetre.
- (ii) Explain why calcite crystals have regular faces.
- (iii) How would you show that a strip of copper increases in mass on heating in air?
- (iv) How would you detect the presence of bacteria in soil?
- (v) One way of decreasing the volume of a gas is by compressing it. State one other way.
- (vi) How would you show Brownian motion? Give an example of this effect for gases and one for liquids.
- (vii) In an experiment the volume of an oil droplet was found to be  $0.1 \text{ mm}^3$ . The area of the film which it gives rise to is  $10,000 \text{ mm}^2$ . What is the thickness of the oil film?

Equal place is given to facts, practical procedures, theoretical understanding, explanation of unfamiliar phenomena in terms of a growing understanding of theory.

The tests come to be diagnostic instruments. The scripts of the pupils convey which topics they have understood or covered, but also show if practical work has not been done. The variation here is considerable. Some teachers basing the whole of their teaching on 'an experimental approach', others using experiments to confirm given results or merely 'to amuse or relieve the tedium of book work and note taking'. But by keeping scripts from the view of other teachers, what is being examined and so taught remains hidden.

Raw scores obtained on tests by each class are modified to make them comparable with other classes. This tends to 'confirm' original setting and enable the grade which is entered on the report to be consistent with which set a pupil is in. For 'guidance' the Head of Department suggests a range of marks for an alpha, P or B class, as well as a mean. The result of this is that most of the grade A's and B+'s are allocated to pupils in the A class whereas the grade E's are given to those in the Beta class. Where there are wide variations individuals may well be promoted or relegated if their teacher puts their names forward to the Head of Department. As was stated earlier there is 'dissatisfaction with this system but no alternative has been put forward to improve it'. There is 'the question of comparability'. Marks being compared are gained on different areas of the course. Teachers' standards vary in terms of difficulty and efforts have to be made to be objective as possible. The grades achieved by a class particularly the parallel ones might be seen as a measure of the teacher's competence as well as that of their pupils.

The number of each grade to be awarded is based on the number of pupils and how ability is distributed. 'A's' and 'E's' reflect upper and lower extremes, than to a lesser degree the 'B's' and 'D's'. The remainder are C-, C+ and C and in fact includes the vast majority of pupils. Rigid adherence to these numbers is unusual. Instead they are increased or decreased to get sections of the order of merit. In fact 'the whole system is an approximation requiring major adjustments to make the actual results conform to the setting and mark distribution'.

#### COURSE SUPERVISION - STAFF AND PUPIL CONSPIRACIES OF AVOIDANCE

So far I have emphasised a duality, Head of Departments monitoring staff performance, staff monitoring their own and pupils'. An overall view is achieved by management through the system of 'course supervision'. This system is one operated by the Head and Deputies with the help of Form teachers. The pupil population is shared amongst these senior staff. The object is that every pupil in the school should at least twice a year take all their exercise books to one of the senior staff for inspection. (Pupils deal with this situation in various ways. First there is a 'tidying up' or 'making the work presentable', covering the folders with brown paper to obscure doodles, removing 'spare' paper and uncompleted work, or simply not showing certain folders. Others who 'don't care' simply hand in what they have, in the state it is in.) Teachers' views and concerns are also made evident. We saw this when considering teachers' strategies of coping with the difficult task of homework. Here information is important as to when books are required. 'A quick check of the books, a few ticks and a dash of red ink works wonders, or perhaps a new folder'. Certainly to leave no teacher's name on the front of 'bad books' whilst at the same time initialling comments on good books.

Management presumably check on pupils' work but inevitably come to assess teacher performance. In science where a teacher uses a bookish mode of teaching, children's folders can be 'presentable', whereas practical records and pupils' own accounts can look untidy when judged against the work of better pupils in higher sets. Whether management can judge the quality of the work done in science or whether other criteria are employed causes anxiety to some, yet pleasure to others. They had decided 'appearances are more important than realities'. Their teaching gave them (Management) what they wanted, 'without much regard for the pupils' who came to expect practical work in science'.

### CONTROL MECHANISMS - PRACTICAL WORK

This was undoubtedly regarded by some pupils as an escape from pen, paper and books, and not necessarily better for the learning process. The freedom to move about, work in a group, and chat often about what they did the previous night or intended to do the same evening was more immediately satisfying. Yet the teacher is relieved from the direction and control of 'standing up front and teaching'. This approach shifts the responsibility of having to learn to the pupils. An informal climate (White and Lippitt : 1960) was found to produce better teacher-pupil relationships especially where such relationships are strained by the difficulty and tedium of much of the work or the work load required to be carried in working towards ten 'O' levels. Practical work is regarded by pupils as 'a change' from the rigours of problem solving or essay construction, an opportunity to relax or recuperate in a therapeutic atmosphere.

For some teachers practical was seen as a 'distraction', another as a lot of 'squit'. It simply meant a lot of unnecessary work - 'why not just tell them'. It is not that teachers do not value practical work but are not convinced of its value for many pupils. 'They just don't want to know'. 'It is difficult enough for pupils to understand the facts and principles given without making it more difficult by expecting them to discover things for themselves. Have we discovered anything?' This reified view of science as that done by scientists and not by school pupils was predominant in two teachers' minds. They were not convinced of the validity of 'their own' practice; really, that of educationalists and curriculum planners. In their own scientific education in grammar schools, at college and university the process of inquiry was not considered and if so rather briefly. Much of what they experienced contradicted the official doctrine. 'Pupils leave schools having hardly achieved the rudiments of writing, calculation or expression. They would land up in jobs requiring little if any knowledge of science let alone scientific inquiry'. There was no transfer to other subjects observed, so this pessimistic view held sway.

Indeed practical work involves much organisation and planning and not always the learning which was expected. For some teachers it provided an opportunity to foster and monitor practical skills. Ones which are not examined in external examinations. The effort for some might be better directed to other objectives. But children can react to no practical by producing indiscipline. A sensitive aware teacher can 'switch to practical to maintain interest and discipline'. Others 'carry on regardless' and are prepared to persist in their ways. Children are put outside the door, given detention, put on report, the whole sequence leading to suspension. Miscreants become visible and get recorded in files. Not just the pupil but the teacher. The Head of Department had complaints from his staff that certain Heads of House 'did nothing' when pupils were referred to them for infringements of rules. He suggested that all 'demerits' and detention marks should be given to him so that a note could be made of them. The staff kept in touch with their Head of Department and where a Head of House failed to act the matter was followed up. This involved trust on the teachers' part but provided the Head of Department with a monitoring instrument and alarm system.

Teacher and pupils create reputations which enter the consciousness of the group, come to be shared and provide information through which expectations are established. Three elements in gaining a reputation were identified (i) the commission of some act (ii) interpretation of that act as rule-breaking (iii) reaction of first party to the label. (D Hargreaves : 1976). Through informal chat 'goodies and badies' are identified, and through exchanges, confirmed. To deny a teacher's category is to risk their wrath, separation or isolation from the communication and classification exchange system. Impressions lodge in the mind of Management. The science department had a reputation for 'no nonsense' and 'good discipline'. On top of this one which was cherished and guarded especially if under attack by outside groups. It was maintained by individuals who made concerted efforts to control the whole of the science department territory and not vacate it even at those 'twilight times of before school, at break, lunch time and after school'. Isolation became a major device. Either removing a pupil to the preparation room to do an exercise or placing a pupil in one of the senior science staffs' groups. In these cases good behaviour overruled ability in sets. We must keep 'so and so apart'. 'Place them in a class where the others will get on with their work and ignore them.' (Stebbins : 1971).

#### INSIDER'S TRUST, OUTSIDER'S MISTRUST

In this department the relationship between Head of Department and other staff was one of trust. Since every teacher as a matter of principle shared in the teaching of differing age groups, difficult groups and examination work, no one was allowed to develop a distorted

view of the job. It was recognised by all 'that even the best teachers have difficulties with individual pupils and classes from time to time'. In this acceptance of the imperfection of all lay tolerance, although one member was singled out for undue criticism. This teacher's extreme views on 'them and us' influenced her relationships with some of the lower classes she taught, 'getting an unfair deal'. Personally insulting language was used to children in the corridor and undoubtedly in the classroom. This precipitated retaliatory action, such as 'shouting matches', 'dumb insolence' and 'outright defiance'.

## APPEARANCES AND IMPRESSION MANAGEMENT

The privacy of the classroom when in lesson was respected by all, particularly by Management, who would arrange to see staff in the 'prep room' or the Head of Department's office. They behaved as they themselves would want to be treated. However the entry of a colleague to collect apparatus would not cause 'too much of a flutter'. Often staff will refer the intruder to the blackboard and say what the pupils are doing. Then would follow a brief exchange which would serve to distract eyes from the pupils' behaviour. If the teacher is talking to the class, perhaps in a raised voice or in solemn tone, pupil sitting upright facing the front no entrance would be made.

In more pressing circumstances an entry is made - perhaps a parent, or other visitor has arrived, a teacher is wanted on the telephone or help is required by a junior member of staff next door with a piece of apparatus. Not all teacher's rooms are equally accessible. The most would be that of a student, but even here access is granted to the teacher whose class the student is taking and of course the College lecturer, and not generally to other members of staff. A technician however has a free pass to all rooms. Apparatus must be delivered and collected. They are sources of information and one way in which a classroom's secrets are revealed.

One doesn't need to enter a classroom to know what is going on inside. Many modern buildings have glass panelled doors, and rooms on the ground floor can be viewed through windows. Teachers recognise this and cope with the situation by covering critical vantage points with fablon or pictures. Decoration of rooms with children's work or visual aids serve other purposes than praising pupils. It serves to provide an attractive appearance and convey an atmosphere of work and orderliness. A front like this is not always appreciated by a visitor or outsider who is 'not in the know'.

Other signs are displayed to be read. A bulging briefcase or pile of exercise books held

under the arm and taken home in the evenings for marking. Spending free time in preparation either duplicating work sheets or trying out an experiment, or producing a set of reliable results which can be produced should an experiment 'fail', instead of just sitting around socialising over mid afternoon tea. Cups would be smuggled out of the way if the Head was 'on the prowl'. Some activities are legitimate, others not so. It is not that the Head had ever been critical in word or look, but indicates the teachers' conception of what is permissible in terms of his self definition.

## APPARATUS REQUISITIONS RECORD AND REVEAL WORK PROGRESS

In this department, in fact in the school, the keeping of a 'teaching note book' has long since been a requirement. It had been replaced in science with a progress card. All the work in each of the ten topics was listed. As progress is made through the section items are crossed off. These cards had to be handed in periodically to show that teaching was proceeding to plan. The senior technician was given a schedule detailing what work was being taught, to whom and when. The technicians knew what apparatus was required by the teaching staff, certainly at the beginning of term but as the term progressed it became difficult for them to keep track of each teacher, they were pacing the work differently. This arises when the pace of different sets was compared. Because apparatus was shared 'snarl ups' occurred. The technicians unable to supply apparatus needs of all teachers. To avoid this 'organisational snag' an order system was suggested by the technician which gained the approval of the staff. Also help was sort in return of apparatus to the storage racks, primary offenders being identified. To eliminate the possibility of having to produce teaching note books again the staff suggested that a carbon copy be made of each request for apparatus. Supplementary information on the request form would say which classes were doing which work. This record was required for reference purposes particularly to help the Head of Department in setting relevant work when a teacher was absent. Of course, it provided more than that, since the progress of every class could be monitored. Furthermore teachers coming in to the department valued the work set by science staff. In return they acted as public relations officers when they reported the 'help' they had received. In this episode we see not only joint action being productive but another line of communication between management and the department opening up and embracing the activities of teachers occupying different positions in the social structure.

"Where social change occurs . . . . There is a tendency for the structure of social situations to change faster than the internalised norms . . . , thus members may bring to these new situations common attitudes which are the product of a passing or past social structure." (Cohen : 1966, p.69)

## **CHAPTER VII**

### **CURRICULAR PROCESSES - ACCOUNTING**

## THE MIND MODEL AND IT'S LINK WITH SETS AND GRADES

In his satirical essay *The Rise of the Meritocracy*, M Young imagines a new educational system developing based on the value of equality of opportunity. The new system was sustained by methods of identifying ability that became steadily more effective. The greatest reason for change was that merit had become progressively more measurable. Merit was equated with intelligence plus effort. By perfecting intelligence tests and using them to identify those with high intelligence then educating them accordingly, a new elite would emerge - the meritocracy. (Young : 1958, p 77-92)

Indeed testing goes on from the time a pupil enters this school until he leaves. Paper and pencil tests are the means used to measure performance. There are two types of test in regular use. One, the so called objective standardised test, which is used to measure potential, whereas tests set by subject teachers and examiners are used to check on mastery and understanding - tests of attainment.

This simple typology of tests is important because it points to the mind model currently held by many educators in which innate intelligence plus effort equals ability or merit.

In the following statement issued by the Headmaster to each and every member of his staff his belief in this model is revealed. It is one which shows the influence of the Senior Inspector for Compensatory Education, who had been called in to discuss the 'rationalisation' of the Slow Learner unit as a degree of anxiety about the lack of correspondence between placing of pupils in sets and their performance on test of general intelligence had shown itself. Because of some disagreement between heads of department a paper was prepared on assessment and grades by the Headmaster as the basis for discussion. A copy of the discussion paper is given overleaf.



## A BRIEF PAPER ON ASSESSMENT AND GRADES

The purpose of objective assessments in the first year.

- (i) to provide information for the basis of setting, banding and streaming.
- (ii) to provide an objective assessment of potential intelligence against which to measure later attainment.
- (iii) to provide evidence to validate the departmental testing which is the current basis of setting.
- (iv) to establish which children have particular learning problems and will need remedial help.

In considering the introduction of objective testing here in the past year, I would be hesitant in recommending its use for (i) but imagine that (iii) and (iv) would be our priorities, but (ii) would be valuable in the long term.

## THE CURRENT SITUATION HERE AND ITS ADEQUACY

By October pupils are at present setted for English, Maths, Language and Science. And on the assumption of teaching in next year's First Year being in ten rather than eight groups generally, Humanities subjects will also have to be setted. Present procedure is varied: Language and Mathematics use attainment tests based on the first month's work; English is setted on a subjective reading of essays; Science selects a remedial group and then four of roughly equal ability (a practice which might commend itself to Humanities).

So far as one can judge these current arrangements work well and there is usually scope for adjustments between sets at regular intervals. But as a general principle the assumption is that objective tests would validate the attainment tests and their variations now used.

## WHAT TEST?

Some schools are using a 'battery' of four tests (and incidentally appear to base their setting on the results of these).

The four are:

- (i) A non-verbal intelligence potential test with a mean of 100.
- (ii) A literacy test which is based on reading experiences and give a 'literacy age' to be compared with actual age.

- (iii) A Maths attainment test which gives a mean score of 100.
- (iv) A Mechanical ability test which again gives a 'numeracy' age to be compared with actual age.

The advantage of a 'battery' is that particular strengths and weaknesses are immediately identified and can be compared with overall potential intelligence. We find these things out, but slowly over a period of time. The disadvantage is the tendency to over-rely on test scores at the expense of what the child is like in real life.

#### A PROPOSAL FOR SEPTEMBER

I suggest we simply, sometime in the first week or so, give a verbal intelligence potential test, and make the results available to all Heads of Department. The advantage is some objective score to use in conjunction with our own attainment tests. The disadvantages is that this will not tell us who, for example, has high potential but low reading age or mechanical abilities.

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The proposal was accepted at the Head of Departments' meeting and put into practice. When the first year list of pupils along with their set positions in English and Mathematics as well as their scores on the objective tests were released it became clear that there was a high correlation between Mathematics set and score obtained. This was not the case in English. In Science preliminary testing had been used to identify a remedial group. This had proved to be reliable. As teachers generally agree 'they can identify the best and the worst', the problem is to sort out those pupils inbetween. With the system employed in the Science department this inability on the part of teachers was recognised. The following paragraph on setting was written by the Head of Science to his staff on the change from mixed ability groups to sets.

"The acceptance and implementation of setting commits us to a view that children vary in ability, that we can identify and assess such ability through achievement in science. Arranging pupils in sets must involve measurement of achievement. A set of pupils is one having individuals of a homogeneous achievement level. One that can be taught more easily as a group. Even after setting there will be variations in each set - less than in mixed ability classes - so the teaching must be directed to cater for these differences. Individual pupils must be taught and they themselves feel that they are achieving the highest standard possible.'

The set a pupil is placed in will determine the grade he is likely to obtain for the subject. Distribution of grades and their frequencies is derived from the normal curve. In this school a seven grade system is in use (A, B, C+, C, C-, D and E). The majority of pupils are awarded one of the C grades. In the setting system employed in the science department the alpha class in each half year obtain grade A and B, the beta class grade D and E and the parallel classes grade C. The school grade system is made to confirm the original setting. This is not surprising to the staff, assuming the reliability of the original setting, equal quality of the teaching and the maximum effort being put in by each pupil. In practice this ideal was rarely realised. Thus the need for a regular review at examination times and resulting promotions or demotions.

As well as standardising the grading system and means for setting pupils, the effort factor in the mind model is quantified. Effort is subjectively assessed but numerically expressed on a 1 to 3 scale. The three pieces of information - set, grade and effort - come to be a concise statement of an individual's performance in a subject placing him in relation to all other pupils in the year. This coded information informs others involved in the school of the standard that can be expected of an individual, and when assembled on a record card or school report which accumulates year after year, it fixes the pupil's educational identity. In spite of the imperfections inherent in the classificatory system, it is given a spurious objectivity and certainty which pupils, teachers and parents come to accept. Yet to the members of the bureaucracy they function by reducing variety and complexity of individual differences to a comprehensible and working nomenclature. One on which decisions can and are made. One which can be justified 'logically'.

What use do the members of the teacher bureaucracy make of such information? Perhaps to legitimate their own rules and practices, to convey to their own audience the rationality, impartiality and efficiency of the operating system. One audience which is entitled to information from the school is the parents. The institutionalised means of communicating with parents is the school report. Set, grade and effort in each subject forms the data on which reports are written.

## COMPILING REPORTS - WHAT IS COMMUNICATED AND TO WHOM

In his article, *Keeping Files: Aspects of the Bureaucracy of Education*, the writer asks the question, What constraints or notions of our roles as teachers lead us to produce phrases like 'satisfactory progress'? (Winter : 1976) Could it be the space provided on the report book for the comment or is the comment controlled by the facts relating to grade, set and effort? As

we have seen teachers are operating within a bureaucratic system, the rules of which are recognised by them. Writing comments for some teachers has become a ritualised routine activity in the sense that value of the comment is considered to be of secondary importance. 'How can we say any more than the grade indicates. Certainly not in the space allowed, without going into the interactive situation of the classroom and the engagement with the subject. This shows up through the work done by the pupil in class and homework books which parents have access to.' At parents' evenings they are able to discuss at some length their children's progress. The job of writing a comment necessitates a switch to a form of shorthand having a reduced vocabulary. The vocabulary is a specialised and limited one. It involves no more than a hundred or so words which have a meaning structure of their own based on the mind model referred to earlier. The model provides a frame of reference under Physics, Chemistry and Biology can equally occur under the heading of English and Woodwork. Very rarely is there a mention of subject content. What then is the subject of the report. First of all it is abstract. It gives no indication of individuality or personality. Instead reference is made to general qualities such as (i) the learner; (ii) content; (iii) style of learning; (iv) teacher judgements and appraisal. These qualities are brought into relationship. A learner who accepts the task and tackles it seriously, 'tries hard' and is accorded praise. One who can't cope with the task places his own interests to the fore is mildly rebuked. The teacher is arbitrator of standards. His competence is certified and endorsed by the system he represents, in the qualifications he holds as well as his position. His competence has been validated and he in turn can judge those who have as yet not been so assessed.

Teachers accept report writing as a normal part of their duty so do not hesitate to conform. They recognise the expectations and obligations which define role. This attitude has been internalised during training and teaching; they are continually reminded of it by senior colleagues in the school organisation who determine the form and frequency of reporting.

For the professional to manage any area of another's life, arising from differentiation and resulting in isolation, he must inform those who share a common interest. The primary interest of the parent is the individual child and his welfare. Whilst the responsibility for the education of the child, has become the province of the professional educator. To bridge the gap between these separate domains involving different meanings and concern, information must flow. Without such communication each partner is unable to exercise his rightful control and influence. Report writing communicates meaning while at the same time provides evidence that a communication channel exists if limited information passes along it. The parents' signature testifies to the act of communication

The reporting activity is one having an unequal power relationship. Reports come to carry much weight and to be judgements which are sacrosanct and not open to question. They emphasise comparability with others. A criterion quite different from that of the parent, whose child is valued on his own terms. A teacher through the omnipotence of the grade and its immutable law of distribution according to the normal curve is equally constrained. 'What is he to write as a comment for a child who year in and year out gains grade E? What opportunity is there for this child to progress? Is it not merely a re-assertion that this child is on the lowest category of innate intelligence?' Some comments are intended to ameliorate this harsh fact. Occasionally distractors are employed such as 'John enjoys this subject', although John has been graded with an E. Who are the remarks on the school report written for and why? (i) reassuring and enlisting support of parents; (ii) they are communications situated within a clear institutional relationship between parent and teacher with pupil as a shared concern; (iii) as preliminary negotiations within the ongoing partnership between parents and teachers.

The following is an extract from a sheet of notes provided for the guidance of the staff on report writing, written by the Headmaster. It stresses that the report is the teacher's professional judgement on a year's work done by the individual pupil. The report is confidential between school and parents. Comments should be worthy judgements on a pupil's effort and achievement and deliberately hurtful comments should be avoided. Much emphasis is placed on standard of production such as legibility. The aim is to project a professional image through quality of work. In this statement so much is assumed but is brought out clearly by Winter's analysis.

- (i) the message appears to be objective and is diplomatic.
- (ii) assessment is addressed to the educational bureaucracy of how likely success is and how much trouble he is likely to cause.
- (iii) decisions are rational, and are justifications of management decisions.

How do professionals create pupil identities - abstract bureaucratised versions of clients?

(a) Professional knowledge leads to identification of 'typical cases'. Using a simple classification schema they are able to reduce the diversity of behaviour to a limited range and use it to discern signs of typical behaviour. The report reflects the perspective of the individual member of the institutional staff and thus the purpose of the institution. Staff are working the terms of an unformulated contract, which involves working with clients to diagnose and treat - thus diagnostic tests.

(b) The file is a potential justification of courses of action, such as to promote or demote, to pass or fail, to warn parents, to recommend a particular curriculum course, or to give a good reference.

(c) The professional agrees to educate pupils in accordance with age, aptitude and ability. Good parents should support teachers' efforts, should not intervene, however not all parents are involved, while others see their rights eroded by schools and the professionals. The teacher has the responsibility to bring into correspondence pupil ability and school career by considering his achievement, personality and background. In this way the market value of the pupil is defined for employers. In this process the educational institution is bound up with the economic and political system through the division of labour. Its organisation preserves conceptions and means of description which represent the world as it is for those who control it, rather than as it is for those who are controlled. So in a capitalist education system, alienating relationships of perception and communication transform the pupil and his school work into commodities for the employment market. Parents and staff are aware of this blunt fact, and are equally coerced by it.

In the professionalism of school reports (Woods : 1980, p 132) asserts that teaching is predicated on principles of selection and socialisation. Pupils are rated according to their conformity to the teachers' instructional and disciplinary expectations. This rating process is subdivided into three stages: speculation, elaboration and stabilisation of educational identity. (Hargreaves : 1976.) But Keddie conceives of models or stereotypes based on band and set position. By identification of cues the types are constructed from observations and facts of experience. (Keddie : 1971) Routinely, types are built up to afford mass treatment on a basis of efficiency. Such constant characters define social types. Where unusual combinations of characteristics show up they pose problems which may cause a threat to usual routines. In these cases reports are difficult to write and the teacher may reveal his failure to typify a pupil by writing vacuous comments, such as 'could do better if he tried'.

#### MEETING WITH PARENTS - THE PUBLIC AND PRIVATE SPHERE

Reports function to bring together the public and private sphere. A report is rarely a complete act. It is a social product of the institution which invites a meeting between parent and teacher in an interview which is an interactional situation. It is scheduled from an institutional agenda. It involves conjoint activity dependent on talk. The action is reciprocal. Complementarity of teacher and parent depends on self conceived identities and communication for the ascription of a mutual legitimation of roles if the plan of action is to be carried out. (Kuhn : 1962) The encounter ends when the objective is realised, is broken off or time runs out. The parents' evening interview can be viewed in a dramatic way using the terms used by (Goffman : 1956); scene, team, front routine, setting and audience. The professional meets a client. Each interactant anticipates the action of the other partly from what is contained in the

report, recipes for action which have proved valuable before, and from parent typological knowledge. The ensuing action is organised and directed according to role patterns which have been established by norms evoked through expectations of significant others, accompanied by continuing indication, self appraisal, redirection and consensual termination. The Interview may serve as a therapeutic instrument a means of reassuring a disgruntled parent, or as a constructed relationship to aid in the achievement of adjustment to some puzzling fact. There always exists the possibility of missing the client through the use of inappropriate language or views which are not shared. Where the sharing of a common language enables a shared frame of reference the dialogue is meaningful and rapport is established. However the professional attitude must be one of detachment, affective neutrality or at least concerned detachment if control and socialisation is to go on as the teacher defines it.

The separate worlds of experience and reference of the parent and the teacher are always in potential conflict. (Lawton : 1968) Incipient conflict may be reduced during consultation by the teacher adjusting himself to the parents' expectations. The teacher must be cue conscious constantly monitoring and adjusting his behaviour in a flexible manner. Yet there is a limit beyond which secondary adjustment cannot be made without compromising position as a teacher and loyalty to the organisation. The teacher, to maintain confidence, and sufficient professional distance, for the consultation to proceed, possesses three institutional supports. First of all his ability to intimidate, secondly expert knowledge, and a socio-legal framework in which to apply it and make judgements, and thirdly a degree of prestige for controlling the relationship. These factors are critical for reducing teacher/parent conflict without minimising his expert knowledge. But uncertainties inherent in the application of knowledge to human affairs make for conflict between teacher and pupil representative. As we have seen one tactic for minimising this possibility is by accommodating to the demands of a parent, but where a parent is educated in educational matters, agreement may or may not be more difficult to conclude. Where social distance arising from high relative social standing exists, control is possible. Also the respect accorded a teacher arising from his reputation or senior position in the hierarchy may mitigate dissatisfaction or disagreement expressed by the parent.

These are some of the factors which govern parent/teacher consultations on parents' evenings. Let us consider the social act further.

In this school the report books are not sent home with the pupils. The deputy head-teachers put them out in form groups on tables in the entrance hall. Parents come in to parents' evening and collect their son or daughter's report and then decide which members

of staff they wish to meet. The staff sit behind individual tables in the main hall, their name plates behind them and chairs set out in front for parents. These evenings are called 'surgeries' by the staff. It is indicative of how the consultations are regarded by the staff and links with diagnostic tests.

There is a pattern to parent attendance at these meetings which is familiar to all teachers. Parents of pupils in the upper sets attend more frequently than those in the lower. This is explained by teachers as 'lack of parental support', which is taken as an explanation in many cases for some kinds of indiscipline and lack of educational success. Some parents consider this public occasion as 'overwhelming and feel that it is humiliating'. The headmaster was aware of this and advised staff to avoid 'deliberately hurtful comments' and 'it's sometimes a matter for surprise how much weight parents give to a school report'. Many take it very personally and feel that the comments - of praise and blame - reflect on them. They often see a poor report as a 'personal rebuke'.

At such evenings parents are 'observed by the staff'. This adds another dimension to the teachers' explanation of pupil differences. A connection is made between parents' economic status for different sets and streams. Speech, dress, confidence, knowledge of the system and a preparedness to question are taken as indicators of social class. This sort of information combined with knowledge of who is who extracted from the files helps to fill in on pupils' 'background'. Within the science department information on the scientific background of parents was freely circulated, as well as the names of any holders of office within the local education department. One Head of House - they compile the files and control access - who is also a teacher of science paid particular attention to her files and passed such information as a kind of favour to those teachers she liked.

Teachers are expected to attend such meetings although such attendance is nominally voluntary. They usually do, but there are instances of non-attendance. One teacher in the science department gave priority to her private life. This did not go unnoticed by other science teachers, and was commented on by parents and staff alike. Issue was not made of it but it was remembered when promotion was talked about! One parent did not ignore the matter. He complained to the Head of Department and the Headmaster. 'His daughter had been taught by this teacher for the past two years and he had not in this time had an opportunity to speak to his daughter's teacher.' In defence the offending teacher said 'she would be prepared to meet any of her parents after school providing an appointment was made'. It is exceptional for a teacher to withstand the pressure to conform to the norms of the school. The reason for such intransigence lay in the way the teacher had been treated by the previous Headmaster.



In most cases teachers present an image of the school in accordance with the Headmaster's perceptions. 'Consistency', even 'collusion' is practised so that a 'united front' is presented. This serves to protect the school from the assaults of outsiders. Awareness of this situation has its dangers and can be exploited by those on the inside. It is on parents' evenings that the public face of the school is on view. It is not a time for internal differences to be revealed.

During a difficult phase in the staffing of the science department it was necessary for the Headmaster, after due consultation with the head of subject, to deploy supernumary teachers of Home Economics within the science department. They were prepared to teach Biology but the biologists were not prepared to give up their biology groups. Instead they were prepared to part with their junior Combined Science classes. To resolve the difficulty the Head convened a meeting of the staff involved. The outcome was that the Home Economics teachers would have to teach combined science. Reluctantly they agreed but insisted that they must receive 'a great deal of help from the staff in the science department'. The decision was made but resented. One of the teachers of Home Economics passed 'inside information' to a parent. It was to do with the grade system described earlier. She exposed the imperfections of the system which caused the parent much unnecessary anxiety. A very angry parent (a lecturer in the catering department of the local technical college) came to see the Head of Science with the intention of 'creating a scene'. With great difficulty he was pacified in that public place. This is not an isolated case. To fend off criticism that a pupil has not been making progress in science can be explained in terms of absence, failure to do homework or by pointing to low grades in other associated subjects such as English and Mathematics. To go beyond this would be deemed to be unprofessional. Each subject teachers' opinion is respected. Such examples serve to illustrate that the staff generally act as a team owing allegiance to each other in the face of criticism from parents. Where failure to support colleagues occurs behaviour is censored and is unusual due to the norm of reciprocity.

One particularly 'tricky meeting' is in the third year when subject choices are made. Much of the difficulty is avoided by holding a meeting after pupils and their parents have filled in their subject choice returns. At parents' evening the possibility of studying subjects and to what level is discussed. This enables pupils to alter their choices in the light of these discussions. No meeting follows however immediately after subject placements in the Fourth year. By arranging the parents' evening schedule a great deal of 'trouble' is obviated.

The science department's attitude to 'O' or CSE level was an open one. Pupils are setted in the fourth and fifth year and did move up and down after the original placing. Which level of examination they took was deferred to the time of entry in the fifth year. This was possible because in Physics and Biology the staff 'saw sufficient parallels between 'O' and CSE syllabuses'. In Chemistry the experimental examination called the 16+ was taken. Pupils were examined on a common paper so there was no need for staff and parents to choose between 'O' and CSE level in this subject. The 'O' and CSE level grade achieved depended solely on their performance in a common examination and 20% on the assessment of skills displayed during the course, such as 'an ability to devise experiments, derive conclusions from results, formulate hypotheses and quality of observations'. By maintaining this policy of openness some of the dissent is reduced.

The option system is drawn up by the Director of Studies in consultation with the Headmaster. Where the members of the department felt it discriminated against their subject they were prepared to act against the earlier decisions. Where two subjects are blocked together e.g. Chemistry and History, it was impossible for pupils to take the three sciences as well as History. In these cases teachers point out the limitations imposed by the timetable and leave the parents in no doubt who to go and see to protest. No doubt the Director of Studies is able to justify what is planned but is made aware of dissatisfaction which exists from the parents' point of view. In this way parents are used to voice dissatisfaction with the timetable not only for their sons or daughters' point of view but also staff members.

Very rarely is the objectivity or competence of a teacher questioned. Parents sometimes insist that 'the child's grade is more due to inadequate teaching than to lack of ability or a will to work on the part of their son or daughter'. Such a challenge to professional competence is opposed. If the parent persists the teacher refers the matter to a 'higher authority' - even the Headmaster. He is expected to 'back up' his colleague and needs to be seen to do so if he in turn is to retain the support of the teacher. However more than one such complaint is likely to alert the Head. He may well lower his estimate of the teacher's professional competence. Sometimes parents who have questioned a teacher's judgement quite courteously are given less in return. Power at the interview rests with teachers not parents, so parents are constrained, and often unwilling to pursue a legitimate complaint owing to any repercussions which might well affect their son or daughter's career prospects. To be labelled a 'trouble maker' and 'one who needs watching' is thus avoided. However a few parents, if dissatisfied, are prepared to take matters further, as the following examples illustrate.

## PARENTS' LETTERS AND TELEPHONE CALLS

Teachers and parents exchange words in other ways than across a desk in the hall on parents' evening. When parents feel strongly about a matter they may throw caution to the wind and write a letter. Often these are delivered by pupils to the teacher concerned or come via the Head of Department or Headmaster. For the teacher this can be a disturbing experience. The privacy of the classroom has been invaded. Practice has been questioned, becomes public and some incident has been exposed for the authorities to consider.

The daughter of a local education officer had been placed on the results of an internal Biology test in the second set. This in itself produced no parental reaction. The teaching staff concerned were surprised at the poor performance but felt that the pupil was 'getting over-confident and slacking - this would be a bit of a shock which might produce greater effort and better behaviour'. The teacher of the second set had a sore throat so instead of dictating her prepared notes as usual she got them photocopied by the technician and handed each pupil a set of notes. The Headmaster came to see the Head of Department reporting the reception of a telephone call from the person in the education office. The notes were considered to be 'illegible and not of a sufficiently high standard to be given to pupils. They reflected the low professional standards of the teacher concerned'. The Head of Department took up the matter with the teacher and it was agreed that a typed master would be made and this would be reproduced so that each pupil would have a set of clear notes. The position was explained to the parent/officer and no more was heard of it. The Headmaster jokingly said he thought he should write to the person saying that 'if the ancillary assistance had not been cut to a minimum then the school would have been able to have done a better job in the first place'. This example illustrates how pressure can be put on a teacher; how such incidents involve management, expose teacher and department. In the teacher's opinion 'getting the notes copied involved concern and extra effort'. Her reaction to this criticism was to reduce her efforts in future. The Headmaster ignored the implied criticism of his member of staff but remained unhappy about the officer's 'unreasonable attitude'.

A refusal to enter a pupil for a CSE examination because he had lost his course work folder precipitated parent action. A telephone call was made to the Director of Studies. She did not know about the missing folder and so saw no reason why the boy should not be entered. The Physics teacher saw the position differently. The matter was more to do with 'the refusal of the pupil to keep his folder up to date' and not the fact of the unavailability of the folder. To keep the peace, the pupil was entered for the examination contrary to the wishes of the teacher and the Head of Department. This was not discovered until the official examination entry form was received from the Board to be checked. Through a failure to

communicate information or an unwillingness to say no, the pupil had got his own way and in so doing undermined the authority of the teacher. This was bad for morale and led to some mistrust between colleagues who by the professional code of ethic should have been co-operating.

Information fails to be passed along established channels. This failure once detected can be remedied. Informal communication is less easy to control but can be equally damaging. A probationary teacher of Physics at the Sixth Form College had remarked quite innocently that 'a science teacher at this school had not covered the 'O' level course fully. He had learned this from one of his pupils who had failed 'O' level Physics in the Summer and was intending a re-sit at Christmas'. This piece of information reached the ears of the Headmaster who reported it to the Head of Science. On investigating the rumour it was discovered there was some truth in it. In fact electricity had not been taught because the teacher had been away with a viral infection for almost a term. The Head of Science at the College was given the full story, later the teacher of Physics at the Sixth Form College came to school to apologise. 'He had only passed on what one of his pupils had told him.' Since he was on probation 'he didn't want anything to be said to his Principal which would jeopardise his chances of completing his probationary year successfully'. The school felt it important 'to scotch such bad publicity, particularly when it was circulating in a neighbouring school. The intake to the school is the guarantor of employment and salary, 'things were difficult enough with falling rolls without ill-founded and bad publicity'. Such rumours 'spread like wild fire' and as well as being a slight on a colleague, impugn the good name of the school and its identity as an academic institution.

From time to time a parent writes in to see if his child can be promoted. Where this is at examination time the results are all important. In between time the folder and homework records are used. A particular parent wrote in to say that 'her daughter was deserving of an A set position, although her teacher opposed such a move'. The Head of Subject, in this case, referred to the pupil's book deciding to give the girl a chance. He was impressed with the pupil's work and attitude. Subsequently, she sat the A set examination coming top. The teacher was surprised but admitted on the side that 'she didn't want the pupil promoted because she was getting uppish'. In cases like this parental confidence in the school is reduced.

A similar request came from a parent whose son had entered the school half way through term. As the previous school record card arrives later it was a practice to place pupils in a middle set. Because they were examined at the end of each term an 'opportunity would arise for pupils to find their own level'. The parent wrote in to say that his son had been in the top

set in his last school. He wanted to come in and discuss the matter with his teacher and the Head of Science. This was arranged. The teacher was a young graduate biologist in his probationary year. He was alerted to 'get the boy's book ready before the arrival of the parent'. The alpha set was full (upper limit 32 pupils - Health and Safety) so it was a question of putting someone down if the lad was to be promoted. The teacher of the alpha set thought no one should be demoted and so it was the Head of Science's job to dissuade the parent. He reasoned 'that although the boy's work was neat and tidy the grasp of the subject was somewhat lacking. In practical records conclusions did not follow from results'. On this the parent pointed out that, 'the teacher's marking didn't show this and in any case the pupil had been awarded high marks'. However, the marks were relative to others in the class and so revealed the modest standard. This the parent had no answer for and was prepared to consider some alternative to promotion. It was agreed to wait until the examination results were out at the end of term when the question of promotion would be reviewed with the others. In the last analysis examination results are accepted by parents as the final standard of arbitration. The next day the Deputy Headmaster passed through the department. When he saw the Head of Science he jokingly said, 'I see you had trouble with the Waterworks Department yesterday'. At this the Head of Science looked vacantly. 'Didn't you know there are a half a dozen of our parents who work there, swop notes, and put the pressure on?'

Alison had been placed in 4x. Pupils in this group were to be 'stretched' by taking ten academic subjects to 'O' level. But Alison was struggling with her Physics. She couldn't cope with the problems set for homework neither did she write up practical records or study the chapters in the text book. Her mother insinuated that her Physics teacher 'picked on her'. This was true if only to make sure she understood the work. Alternative books, extra coaching was provided but still Alison did not progress. In this subject the teaching style was different. Note taking was expected of the pupils, skills of numeracy and literacy were assumed. The teacher expected high standards, including independence and the subject was approached experimentally. In this particular case the conception of what a teacher should do were not in line with parent and pupil conceptions. This led to Alison's difficulties. No amount of reasoning could shift them from this view and so Alison trailed behind never getting to grips with the subject.

Two other matters give rise to tension between parents and teachers. One we have discussed previously e.g. Homework. The other is punishment. For failing to do well on a test the whole class was kept in for an hour after school to do extra work. One parent wrote in to say 'the punishment was excessive. The pupil had genuinely tried to learn the information in the time allotted for homework, but the homework set was too much of a task and bore no

relationship to the normal standards expected in other classes by other teachers'. A contravention of a school norm produced this response, but was in keeping with the Department's aim to improve examination results.

## CHARACTER REPORTS FOR EMPLOYERS

Public accountability is a current political slogan. To whom is the school accountable? The school does not have one public audience but many: the parents, governors, inspectorate and local education authority. Increasingly the school is expected to reveal its aim and objectives, organisation, management and discipline. This is done in various ways. Some of which have been described already. In what other ways is this demand understood? Not by giving parents more say; parent representation on governing bodies has been limited, parent associations' efforts have been confined largely to money raising schemes. But there has been an increase in public relations work as evidenced by school prospectus, brochures, sports diaries, the school calendar, reports, parents' evenings and invitations to parents to come in to school to discuss pupils problems.

The aims and objectives of the school curriculum indicate ideals and overall philosophy. In this school 'the Headmaster considers developing talent, a growing philosophy of life, and leisure time interests to be paramount'. Admirable in themselves, but without indicating the means to these ends and having a way of knowing whether or not they are being realised, make them mere aspirations. After five years in the school each pupil ends up with a record card, report book, possible examination certificates and a character reference. Is it that the first aim is the only measurable one or the most worthwhile to evaluate? If evidence of success is limited, then the moral worth will do - cleanliness, tidiness, obedience, good attendance, punctuality and being 'well behaved'. Members of the science department play their part by contributing to the records of each pupil but are more concerned with creating the elements of identity to do with the achievement of success - the identification of talent. Unlike the House staff who collect and record extra curricular information and record good or bad behaviour. Talent in science is judged in terms of the ability to do well on attainment tests in the scientific subjects. Here an analysis of what counts as a good answer would be revealing. Later the ability to reach grade A or B or an 'O' level paper is the final measure.

The system and procedures devised and operated by the department are aimed at identifying and sponsoring those gifted in science. The organisation of teaching groups across a year reflects different levels of ability. However, in the first year pupils are 'an unknown quantity'. The first 'sort out' identifies a remedial group only. After one year of science

education a top group is also identified. By the time pupils reach the end of the third year prior to making subject choices they 'know' which science subjects they are 'good' or 'bad' at. Good at gains a positive evaluation, bad the opposite. Through regular and frequent testing using finer filter papers, fourth and fifth year pupil's potential and likely level and achievement is assessed.

When a teacher has to decide which level of external examination his pupils will enter he becomes particularly cautious. The teacher is making his estimate which will be compared with results in the external examination. But this will depend upon the prevailing attitude of the school. Will inaccuracy in his estimate be held against him? One line of action, perhaps 'the line of least resistance' allows pupils to decide which examination they wish to enter. The belief being that if a pupil needs to reach a certain standard then he will try hard to do so. Internal motivation is recognised. This entry policy might well lead to the maximum number of passes but a large percentage of failures. It also avoids parental frustration. Not all members of the department viewed the matter in this way. They preferred 'to control entry and face the parents objections'. These science teachers tended to be tough minded, trusting in their own ability to predict pupil performance reliably. Tough teachers employed the same pedagogy. Some pupils reacted against this but those of them that accepted the regime often 'did well'. The let out clause was to allow parents to pay the entrance fee if their son or daughter was not recommended for the examination by the school.

#### EXAMINATION RESULTS MADE PUBLIC TO GOVERNORS AND LOCAL EDUCATION AUTHORITY

Accountability and standards are euphemisms, for high external examination results and their publication. Increasingly the school has geared itself up for their production. Overall results when compared with national figures were much better and improving. However when the first comprehensive intake sat the examinations their results reversed this upward trend. This did not surprise many of the staff. The intake that year was a 'poor one'. The local grammar school, although now a comprehensive school continued to attract 'better pupils'. Its good reputation had a favourable influence on middle class parents who sent their boys and girls there expecting a sound academic education. This school still had a few 'good' pupils who had come on church places, but a disproportionately low number. The school had been in great turmoil during the present examination time and this had in the opinion of the staff had an adverse affect. The new Headmaster who had taken office the year before, was determined 'to stop and reverse the trend'. The school's reputation was to be developed in the academic sphere. 'It was felt that the considerable organisational and disciplinary problems had been

largely overcome so now it was time to strengthen academic departments'. The science department received a greater proportion of the school's capitation allowance, an extra special allowance for buying more text books, an increase in the number of science staff as well as more technician help. Science teaching shifted from stage managed heurism in mixed ability groups to more didactic methods employing text books, demonstration, plenty of exercises and examination drill. At departmental meetings a strategy was worked out for making the science teaching more effective in terms of examination requirements. This change in direction was welcomed by the majority of the science staff, some wanting to change things more drastically. There was agreement that the previous Headmaster 'had not given the department sufficient consideration'. By consideration was meant smaller classes, better allowance of time, staff, technician help, and cash allowance as well as above scale posts.

At this time headteachers of local secondary schools had been talking about accountability. They interpreted this to mean revealing the school's examination results. How were the results to be presented? At a full staff meeting the Headmaster said 'that records were being kept by the Local Education Authority. If there was to be a league table he wanted the school to be near the top. He had looked at the school's examination results over the past three years and had presented them graphically'. The graph showed passes as a fraction of entries for each subject over the period of the three years. Along the horizontal axis was plotted the years, the vertical axis was the pass ratio. A rising gradient showing improvement was in red, a falling gradient in black - a black mark! The point being made was abundantly clear. What would be the department's reaction? At first there was a mixture of embarrassment and laughter. Then it was realised what was meant, the policy of some, on entries, must change. No candidate should be entered for 'O' level unless it was very nigh certain that he would pass. This would reduce the number of passes in a subject but improve the pass rate. 'The reputation of the department and the school was being maintained at the expense of individual pupils. Or was it simply an attempt to reduce expenditure on examination entries? Institutional requirements being placed before those of the individuals it was set up or purported to serve.'

Individual teacher reactions to candidates' results are always mixed. Outstanding pupils are usually successful. In their case it is more a question of which grade rather than pass or failure. Some candidates are difficult to predict and might fall either side of the pass line. Other explanations of failure might be that 'the paper was stiff'. This would mean that 'the questions had concentrated on specific but minor details of the syllabus' in the eyes of the teacher or perhaps 'the form of the questions had changed'. The question was not direct and



had been wrapped up in words. The question had to be unravelled from the words in which it was framed. Where results had been bad overall, organisational factors such as 'time allowed for the subject, an undisciplined element in the class' or simply 'the pupils were a dim lot'. If a grade A pass had been achieved by at least one pupil then it would be said 'if so and so got an A then the others could also'. This served to exonerate the teacher and place the blame on the pupils.

How had other school fared? The local newspaper provided some indication but even then the situation could be clouded. One neighbouring school released its results to the press as usual but swelled the columns by including subjects graded at the 'lower level pass' of D and E. Such a practice gives a false impression to those who are ignorant of the examination system. Others see it as 'impression management'. Additionally through inter-school staff contacts or through sons and daughters who attend other schools information leaks informally.

As part of the feedback from the Sixth Form College, 'A' level results are passed to the feeder 11-16 comprehensive schools. The science staff got to know how well their own pupils had performed in their 'A' level examinations. This information was treated with interest particularly where former pupils had done well. The results were rarely ever surprising. 'O' level results were a good predictor of 'A' levels. One boy who had failed the 11+ had achieved nine 'O' levels all grade A or B, and then went on to get 3 'A' levels and a place at an Oxford college to read natural science. The staff were proud of this success. This was the first pupil from the school who had achieved this distinction. It was taken by one member of staff 'as evidence that the science department had the ability to teach gifted pupils' and validated its practices.

A team of H.M.I.s inspected the local Sixth Form College, entering in their report 'the need for closer links with the feeder schools in matters of the curriculum'. A local headmaster acted as chairman of the first meeting when science teachers of local feeder schools were invited to the Sixth Form College. The outcome of this meeting was the setting up of subject groups when integration and continuity of curriculum could be discussed. The first meeting was called to inspect the most recent 'O' level examination papers. It was agreed that 'subject syllabuses were overloaded and so it was necessary to miss out some topics'. A plea for adequate cover of topics was made by Sixth Form staff. Syllabuses were compared, also 'O' level and the 16+. 'Differences of content were considered to be less important than how well the subject was taught.' 'Some pupils had insufficient practical experience or skill in the use of apparatus.' One teacher summarised the views of the 11-16 school science staff

by saying that 'getting candidates through was the most important objective. If this was not done the Sixth Form College would not have enough pupils to run science courses'. It became clear as the meeting proceeded that the number of pupils coming forward to study 'A' level Chemistry and Physics was low and that the cause for this lay in the feeder schools.

## PRIZE GIVING, EXHIBITIONS AND DISPLAYS

The introduction of prize giving by the new headmaster was aimed at emphasising academic results. Subject heads were invited to nominate prize winners. This posed no problem. Pupils achieving the best results in 'O' level examinations took the prizes. There were no prizes for anything other than academic success. The prize giving ceremony took the traditional form, with guest speaker, chairman of governors, headmaster, head boy and head girl making up the platform party. The audience being made up largely of parents of prize winners, governors and the press. Whilst guest speakers extolled the virtues of a liberal education, prizes and certificates emphasised a narrower concern. Cups and trophies had been re-allocated. They were not for sporting activities and inter-house competitions. Prize giving concentrated on performance in the subjects, rewarded by books. Staff were free to attend this event if they so wished but they were not the primary audience. The main function was to publicise the school's success.

The entrance to the school is no longer a picture gallery of past headmasters or dark oak boxes enclosing silver plated inscribed trophies commemorating past team or individual performances in games and athletics, or rolls of honour celebrating individual pupils who have gained academic distinction by winning county or state scholarships, major and minor scholarships and exhibitions to Oxford or Cambridge. Now the vestibule is a less austere place, brightly lit and decorated. Shelves and glass topped lift-up type museum cabinets display awards gained in music festivals, Duke of Edinburgh Award Schemes, the British Association for Science Education. Paintings and models, embroidery, diaries, poems, historical artifacts and displays reflecting projects completed by the pupils. Visitors to the school are presented with a view of all aspects of its ongoing life. The science department were slow to realise the importance of this 'window dressing'. Absence of any science displays was commented on by one head of house. This was remedied when a governor of the school loaned a set of colour photographs he received from a friend in Houston, Texas. They were of Mars and other planets taken by a Voyager space craft. This formed the basis of an exhibition on space exploration put on by the Physics Department. This beginning was followed by more exhibitions on crystals, electroplating, microchips, micro organisms and fungi in the Autumn term.

One doesn't have to visit the school to get an impression of its life. This is built up by

public relations work through the medium of the press, newsletters and parent school correspondence. Nevertheless Open Evening is an opportunity for the school to create the right impression. This is done through classroom displays and more grand exhibitions put on in departments. The theme for the year was The Year of the Child. Each department was expected to build their exhibition on this theme. Previously the department had tended to 'show off' its apparatus and facilities by setting up experiments and demonstrations to illustrate a topic or area of study from Nuffield Combined Science. Following the Headmaster's directive it was decided to study our own pupils. The whole project began with a question about a question.. 'If you could count on honest answers, what questions would you ask your friends?' The question sheets were collected in by the staff who then attempted to classify them - ten fairly definite classes were identified. A questionnaire was now prepared consisting of a group of questions about each of the ten classes. The questions were posed so that the answers could be dealt with numerically. The age of each boy and girl was noted. Each teacher was responsible for one of the classes in the questionnaire. With the pupils support the data was collected and presented graphically, or in pie-charts and histograms. The ten sections were recombined to give a profile of the boys and girls in the school and the variations amongst them. A brochure and guide was prepared so that visitors and parents could follow the study in all its stages.

This piece of work had been done in lesson time and had put a stop to normal science teaching. Certain of the staff objected to the loss of time. To them 'it was contradictory to be involved in such time wasting schemes when in the end it would be the examination results that would count'.

Leisure pursuits and extra curricular activities were considered by the Head to be part and parcel of a 'good' school. The science department were not involved. A science club - the New Lunar Society - was formed taking its name from one which existed in Birmingham in the last century, having some distinguished members such as James Watt. This was set up not in response to the request of pupils and parents but in the belief that technology should be incorporated into the curriculum. Meetings were advertised on the back page of the termly diary and fixture list. As a solar heating competition was being organised by the Science and Craft Inspectors of the county, it was decided to design, test and make such a device to enter the competition. This was done and the success achieved gave impetus to the activities of the club. The work was recognised by the Headmaster, included in a school brochure, reported to the governors and given an honourable mention in his founders day speech.

These efforts were largely a response to the Head of Department's perception of what the Headmaster expected. But in spite of some criticism of 'the extra work involved' it did place the department in a good position vis-a-vis others and paid dividends in terms of goodwill shown the department in terms of staffing and resources. Regretfully it did not return the salary point of second in charge of the department. The nominal holder of this position took extra duties of a different nature to gain promotion to scale III. His commitment to the department was partially withdrawn, instead allying himself more with the Heads of House. This change became evident in terms of time spent in the department and the allegiance he gave to House staff when disputes between academic and pastoral care staff broke out. Before his appointment he would have backed the science department without any hesitation, now he was pulled two ways at once. In science department meetings his performance was observed not only by science staff but also another Head of House, a biology teacher.

### ESTABLISHING A GOOD ACADEMIC REPUTATION

It had always been the policy of the Headmaster to include some science in the core of subjects throughout the five year course. Both General Science and Rural Science were studied in the one secondary modern school followed by and with a choice of Physics, Biology, Rural Science, or General Science in the fourth and fifth years. In the girls' modern school, General Science, Biology and Human Biology were taught. With the merger of the two schools into one comprehensive school, the pattern of science subjects changed to two years of Nuffield Combined Science followed by two periods each of Physics, Chemistry and Biology in the third year. Rural Science and Human Biology, along with child care becoming low status applied science subjects taught to the less able pupils. Physics, Chemistry and Biology as pure sciences dominated main stream science in the upper school. General agreement between management and the science department existed over compulsory science for the first three years but this was not the case in the fourth and fifth years, even amongst members of the science staff. The Head of Science argued 'that for a balanced curriculum at least one science should appear among the list of subjects studied to examination level. For many pupils General Science would have been more appropriate, a curriculum based on the Nuffield Secondary Science scheme or SCISP'. This view was opposed by the rest of the staff. They thought 'that subject content was less important than methodology. The latter could be learnt in any science course'. This view would be difficult to substantiate from classroom teaching, text books or note books. It was given as a reason of justification of present practice rather than a reason for action. But this view while put to management was not believed.

'Science is too difficult for many pupils. All they wanted was to be entertained. As soon as they are expected to get down to detail they didn't want to know about the subject. Practical work was simply an opportunity to mess about, avoid listening to the teacher or doing written work. Like other academic subjects it was considered boring.'

Staff were only too aware then of the difficulties in teaching fourth year groups but recognised the folly of agreeing to a policy of allowing pupils to opt out of science.

'Many of the brightest pupils would not choose science while many of the less bright pupils would be pushed into science by the careers department.'

The utilitarian value of science and its practical nature would be stressed. The suggestion coming from the Director of Studies that 'science should be made voluntary in the fourth and fifth years', was treated with suspicion. It was considered 'a mere ploy to bring about reduction in the number of teaching groups as the science department was understaffed.' 'If the number of pupils opting for science fell it would mean less science to be taught.' In a climate of falling school rolls and a school with an overstaffing problem it would be foolish to allow the demand for science to fall. Teachers' jobs could well be at stake. The number doing science were kept high, swelled by the numbers of pupils studying three or two sciences compulsorily or out of choice. These facts were used to impress the Director of Studies of the need for more resources human and material. Also by further insisting that all the most able pupils in course Ex study two sciences, and those wishing to go to the Sixth Form College to study pure science leading to careers in medicine, dentistry, agriculture or engineering, study three sciences. This was important if the department's examination results were to be improved.

In spite of all the work, planning and confidence building, examination results were not as good as those of other departments in other similar schools within the city. Of course there were many outstanding individual results but when it came to average performance something was wrong. How could this be accounted? First of all the school was in transition, it was undergoing an identity crisis. In parents' and some staff's eyes 'it was still a secondary modern school although it aspired to be something else'. And so they preferred to get their gifted children into the local fee paying school or the other secondary school which had been formerly a grammar school. The intake to the school the staff agreed, 'was lacking in children of high ability'. This view was supported when the attainments on standardised tests given in the first year to the new intake revealed, not a normal curve but a bipolar one. This indicated few gifted or dull pupils

but a majority not scattered very widely about the mean. How could this distribution be explained? Possibly in terms of the school's reputation.

Much of the Head's energy was directed to persuading parents of the quality of the education provided by the school. Some of the means employed have been described. They include improved communications between the school and its various publics. The science department looked at its own organisation and efficiency so to improve its performance. Nuffield science and discovery methods were replaced as a return was made 'back to basics'. The curriculum innovation trend was slowed down. Efforts were shifted to strengthening pupil performance. Greater checks and demands were being placed on pupils to achieve high standards. Homework timetables, Homework diaries, course supervision, quick reports, setting of all teaching groups, more frequent internal examinations under strict examination conditions, more text books and a system of merit and demerit awards for good and bad work were introduced. While the internal organisation was improved to orientate the school to achievement, teaching staff in the academic departments were left to communicate this to parents while the Head took every opportunity to publicise the work of the school, projecting an image of the school as one where academic standards were highly valued. His strategy was aimed at attracting boys and girls of high intelligence from good homes. 'By increasing the proportion of such pupils in the school the results would improve and these would persuade parents of the quality of the school'. Now that a selective system was no more schools were in competition for the recruitment of talented pupils. Thus the image of the school being projected was one meant to appeal to professional people and the like who had similar aspirations for their children.

## **CHAPTER VIII**

### **CURRICULAR PROCESSES - EVALUATING**

## FORMATIVE EVALUATION BY TEACHERS OF THEIR OWN TEACHING AND COURSES

The final step in the curriculum process identified is evaluation. We have seen that this process has been going on throughout the yearly cycle, in response to the needs of pupils and teachers. Weaknesses in the curriculum when identified are remedied or referred upwards to those in charge and who have the power of decision to make alterations. Identification of problems and their solution occurs at all levels. Some problems are created by a group which fails to appreciate another one's understanding of their situation. Through constant identification, negotiation, and resolution of problems, practical steps are taken to improve the curriculum particularly its effectiveness in bringing about learning. This kind of evaluation called formative evaluation (Tyler : 1971) is an ongoing process during curricular development, one in which all the science staff and management are involved.

In the science department it took the form of the construction of the section tests, writing section revision sheets, the introduction of objective tests books, and the unsuccessful attempt to get the staff to write out the objectives of their courses, in terms of the kind of behaviour expected of the pupils. This they resisted as an 'unnecessary piece of paper work'. The examination syllabus was considered 'sufficiently detailed and logically arranged as to provide a way through the course'. A preferred text book used chapter by chapter was the 'scheme of work' employed by most as a means of transmitting a disciplinary matrix. (Kuhn : 1970, p 182) Prescribed content was considered to be 'all that was necessary. If the facts, ideas, and principles making up the course were understood pupils would be able to manage the sort of questions set'. Of course the teaching staff had their own ideas of what the examiners expected from the candidates, derived from previous examination papers. So the teaching was directed to this end.

One thing that school set examinations clearly indicated to the teachers was 'the inefficiency of the teaching-learning process.' Results indicated in the majority of cases 'low level knowledge, misunderstanding and little grasp of what the question or subject is about'. This feeling of failure was expressed most vividly when hurriedly marking a pile of scripts at the end of term. Relief from the 'tedium' was had by recounting 'howlers'. Apart from these occasions self doubt is rarely voiced. Failure to achieve objectives is more likely to be explained in terms of the pupils. 'Those with ability can understand, those without cannot.' It confirms the low expectations the teacher has of many pupils. A form of a self-fulfilling prophecy. But for the teacher it serves as a defence mechanism protecting him against self doubt. By sharing with colleagues this disappointment in pupil performance he is reassured that all is well, as he learns the experience is a common one. Instead of questioning his own rationale and practice, his criticism is directed against external factors in his situation, attempting to bring them in line with his own understanding.



Test results are private to the department, by scaling up and other means of adjustment the final results are made to conform to an acceptable range and distribution. Individual teachers prescribe various treatments to remedy weaknesses the tests have diagnosed. Less practical work, more theory, worked examples, learning chapters of the text book, regular revision exercises, and quick tests. These methods reduce pupil enjoyment and interest but emphasise memory, understanding, accuracy and examination performance. Motivation shifts from intrinsic to the extrinsic factors. Such a teaching style is not equally effective with all sets. Pupils may show disapproval by misbehaviour, so placing a greater burden of control upon the teacher who may then be forced to take punitive action by setting impositions such as lines and detentions, leading to demerit letters home, or even suspension. Such a classroom regime may well produce better 'results' but at what cost and strain.

Clearly these methods of formative evaluation and the changes resulting from them are one aspect of the curriculum, i.e. the capacities of the pupils and the equipment and materials in use. But anything about the school's curriculum can be evaluated: its objectives, scope, quality of its personnel in charge of it, and the degree to which the objectives are implemented. In the end they have a bearing on how effective is the learning and this is the most basic yet fundamental criterion. Now the evaluation process we have been considering was operated by the members making up the department. They are not alone in being so interested, other groups and different categories of people carry it out. Central administration may be concerned with the general effectiveness of the total curriculum, or the extent to which the central goals are being attained.

"The curriculum development movement of the 1960's typified by the work of the Nuffield Science teaching project, was an overt attempt to resolve both the content and the pedagogical aspects of the science curriculum." (Schools Council Bulletin 3 : 1970, p 7)

Those more immediately concerned with the progress of pupils, evaluate the curriculum in terms of its efficacy in helping pupils progress towards educational objectives. As we have seen the science teachers use it to assess progress toward specific objectives of a given course unit, while at the same time pupils make judgements about what they have learned and the extent to which they accomplish what is expected of them, as well as the means employed to achieve ends. Parents evaluate the outcome of the curriculum in terms of what they think their children are or are not achieving.

When considering school reports we saw that a narrow and broad definition of grades leads to confusion in writing and interpretation. The pupil may be evaluated in several different ways: how he is doing in relation to his ability, how he stands relative to others in his class or how his standard compares with national norms. The question is, should grades represent progress or comparative status? The former is more likely to concern the parent, whilst the latter the teacher and school. Professional judgement is formed against some criterion or norm such as a national average or an expectancy formula, e.g. the distribution derived from the normal curve.

Evaluation had come to be seen by the staff as their professional concern; certainly evaluation of the formative variety. In the two secondary modern schools experience of entering pupils for external examinations was confined to those 'who stayed on for an extra year'. There were increasing numbers of such pupils after the raising of the school leaving age to 16, and the setting up of the CSE examination system following the Beloe Report in 1960.

This flexible system, controlled by the teaching profession itself, was a major step in the continuing trend to terminally evaluate the work of an increasing number of secondary pupils but not the school curriculum.

#### SUMMATIVE EVALUATION BY THE UNIVERSITY EXAMINATION BOARDS

With the change to comprehensive schooling came a category of pupil rarely met with in the modern school - those pupils occupying the top twenty per cent of the ability range. For these pupils the General Certificate of Education Ordinary Level and Advanced Level examinations were the form of the summative evaluation. One which was not teacher controlled, but carried high prestige and acceptance in the eyes of the schools, parents, higher education and employment. Increasingly the reputation of a school came to be equated with the number of passes achieved. In time teachers came to realise that syllabuses and the external evaluation system dictated the functioning curriculum. Teachers were compelled to stress in their teaching what the syllabuses emphasised. Thus contradictory expectations were placed upon them. One set of expectations arising from innovations and curricular packages, another from the instruments of evaluation set by the Boards - examination papers.

Through the mass media, television, newspapers and journals such as those of the Association for Science Education, Times Educational Supplement, the staff became aware of criticisms being levelled against the schools, particularly science and craft departments which in the opinion of many thinkers 'were failing to recognise and cater for applied science

and technology in the curriculum'. Amongst the science staff much sympathy existed for this point of view. Real obstacles could be seen not least amongst the many being the requirements and syllabuses in science set by the GCE examination boards. It appeared to one member of staff that:

"syllabuses were even more crowded with content, work, which when they were at school had not been met until 'A' level or at college. The ideas and principles and their connections into theoretical frameworks were increasingly difficult and abstract. Pure science being greatly emphasised as to the almost total exclusion of applied science. The whole way in which school science is planned, organised and equipped at this stage reduces the possibility of the kind of thinking and doing which is technological."

The same restrictions didn't seem to exist in CSE syllabuses. In any case through mode III examinations a possibility existed for designing a science curriculum containing applied science. In some mode II examinations topics based on engines, astronomy, electronics and synthetic fibres were incorporated. But these variations existed for the middle range of ability and lower. Furthermore the expenditure on apparatus for the pure science courses for the upper bands severely limited what was left for the others. It was expedient to choose courses in the CSE examination where there was overlap with 'O' level. The same apparatus could then be used generally.

Another reason other than the organisational one was given by the staff. 'Because of timetabling strictures some fourth and fifth year classes spanned the top half of the ability spectrum. Pupils in the same class might take 'O' or CSE examinations, therefore a common curriculum course had to be provided.' Another argument against such courses was that they are terminal. 'If pupils were to continue their education in science in further education, they would need to have a grounding in pure science which is only given in the traditional syllabuses.'

In the course organised by HMI, which the Head of Department was nominated to attend by the local science inspector, the place of technology in the whole curriculum was considered. The view being put forward was the 'it is not science alone but the whole curriculum which needed to recognise and incorporate the technological dimension. The impact of changing and different technologies on the development and formation of our society cannot be overstated. Present day society owes as much to the industrial revolution as it does to classical civilisation.' Therefore technology must be given its rightful place, not as another subject on the curriculum, but as a theme which penetrates and connects most subjects of the curriculum. 'It is a distinctly

creative human activity which has shaped our past and is likely to shape our future, but increasingly so. An education failing to recognise these facts is seriously lacking and unbalanced'. What impact did the ideas brought back from the course have on the department. Basically they were accepted; 'you are preaching to the converted here, they, the headmaster and director of studies, should have been on the course.' A distinct impression was given that change did not originate in the department, 'someone else, somewhere else had the say'. This is not to imply they were disinterested.

After school the New Lunar Club was established by a chemist and two physics teachers and a small group of enthusiastic boys and girls. The first project was to design and build a solar energy device. This decision was made after the receipt of a circular from the county inspector for craft and technology which gave details of an inter-school competition organised by the British Association for the Advancement of Science. This would give a definite goal which would serve as a focus for club activities. The club established technology within the school even if it was then an extra curricular activity only. The knowledge of technology was almost zero. One teacher having studied the Technology for Teachers course of the Open University cautioned the enthusiasts of the difficulties they would meet in terms of resources if a timetabled course was set up. Thus, the small extra curricular beginning. The project was completed, the solar panel was entered for the competition and was placed seventh in a class of fourteen. This beginning provided the impetus and attracted interest from others in the department, the school and wider afield. In spite of the constraints imposed on innovation in school science, the determination of a few had shown what could be done. The project was positively evaluated by the Headmaster who used the fact in a school brochure, mentioned it on Founders' Day, in so doing encouraging the enterprise shown by the team. The science department by this small action demonstrated its concern to adapt and be a progressive force in the school. The identity of the department was being established and expanded. Its standing, reputation, and the morale of its staff was improving and coming to be recognised. But despite these gains more remained to be done.

The social object which served to impress on the department the aims of the school, as defined by the Headmaster and so what he valued, was a large coloured graph which summarised the school's external examination results. Heads were sent a questionnaire at the beginning of the Autumn term by the Local Education Authority which required details of the previous summer examination results. Quite clearly the Authority was compiling statistics of schools' examination performances. Such data when analysed enables a comparison to be made of different schools, it constitutes a form of evaluation which had not been exercised in the past. Under the mini Education Act of 1980, accountability had been put forward as Local Authority

and schools came under increasing criticism from others outside the educational system. Assistant staff were not aware of this recording process, the first time that concern was expressed was at a full staff meeting when the Headmaster presented his graph comparing the results of each subject in the school - or at least the number of 'O' level passed obtained and referred obliquely to talks he had held with other Headmasters on how best comparison could be made and presented. The graph was pinned up on the main academic notice board in the common room. This act had a considerable effect and was the topic of conversation for some time. It ruptured the silence which normally surrounded such matters. The subject had not been broached before, certainly not by the Headmaster in a staff meeting.

Previously the computer read-out of the examination results was available for all to see, so that a check could be made of candidate's performance. The degree of importance attached to this information can be judged by the staff interest it engendered. Before the end of the summer holidays staff would go to school 'to see if the results were out'. The prospect of examination results arouse, not only in the pupils but in their teachers, a good deal of concern. Naturally teachers are interested in the performance of their own candidates, first and foremost in the number of passes gained and then in the grades. These are checked off against predictions attempted on the basis of professional judgement. With increasing experience a higher degree of reliability is reached, although one teacher felt 'that at the worst the prediction would be but one grade either way'. Where the discrepancy is greater concern arises and if in more than a few cases some explanation is looked for. Very rarely is a 'remark' called for possibly because experience has shown that the Board rarely ever alters the grade first awarded.

Inevitably, because the results on the read-out are given opposite the name of each candidate, it is possible to see at once the candidate who has done well in the teacher's subject, but also overall. At the foot of the read-out a summary of the passes in each subject and the grades gained are given. So what is surprising about the Headmaster's graph? The graph includes a factor which is not included in the annual summary coming from the Board. This is the number of candidates entered. The graph plotted the success rate for each subject on a year by year basis. Where the coefficient was higher than last year there is an upturn in the line, whereas a downturn when the coefficient is lower. The significance of the line is increased by making an upturn line red, a downturn line black. Such a presentation stressed the obvious importance of good results but cautioned against entering candidates who were border line cases. If staff were to go along with this interpretation it would also reduce the costs for entering pupils for external examinations. This was construed as, 'an effort to reduce costs and increase performance, as preventing double entry of candidates had done so in earlier years.' Where parents exercise their rights to pay entrance fees for their children against the better judgement

of their teachers posed another dilemma for the Head. One member of staff asked if these results would be included in the pass coefficient. The Head ruled that they would be, without saying why. But his answer was considered to be unreasonable and the matter was left at that. The outcome of this was that success at 'O' level was accepted as the means of evaluating a department. Results on the CSE examination were not to be included in the graph although they had to be filled in on the LEA return. What was the reason for this, we have seen. 'The profile of examination results showed clearly that in the middle and lower ranges children were doing well, but in the upper ranges of ability boys and girls were not realising their full potential' This was the interpretation placed on the Head's action by the science department. But there was another deduction, the Head accepted external examination as a yardstick for measuring the success of the school. In the terms being employed in this study, the examinations were summative evaluations based on a national norm. The question remained, how were results to be improved? For it is one thing to locate a weakness and another to correct it.

It was not surprising that the Head had articulated his assessment of the school's performance when he did. At that time of year he had the most recent set of examination results before him. Accountability was a political slogan being banded about, one that had become so insistent, demanding action from the LEA, thus the collection of examination results from secondary schools, with the rider contained in the mini Education Act of 1980 that they had to be published despite the protests from the educational establishment. At national level the Assessment of Performance Unit was set up with the expressed purpose of devising instruments for measuring educational performance in several areas of knowledge and certainly science. But the most devastating information for the Head lay in the results for the year contained in the computer read-out. This was the first fully comprehensive intake into the school to take external examinations. Their results overall were worse than the preceding years intake that had come through the secondary modern school. How could this be explained? The staff had plenty of answers which did not appear in the statistics. They had to do with 'the merger, the split sites, imbalance of girls and boys, morale of the staff, the building delay and supply of resources. Efforts of the staff had been directed away from implementing the curriculum to pastoral care, organisational and administrative problems'. But the employment of standardised tests illuminated the problem. 'The intake of the school was lacking in the number of boys and girls of high ability. Because in the early days of comprehensive re-organisation parents were given three choices of school. The former grammar school was able to secure an intake of first choices. Its grammar school reputation exerted a powerful influence which is only now beginning to wane.'

## HEAD'S PERCEPTION OF THE AIMS AND THUS A DIFFERENT SET OF CRITERIA TO EVALUATE

We saw earlier that the broad view of formative evaluation identified many factors in the curriculum. One which staff was aware of but which was not talked about outside cliques, was the quality of the teaching and personnel in charge of the curriculum or some area of it. However things were changing. A connection between the examination results and the quality of the staff had been insinuated by the Head but not openly expressed. In this sense quality is being interpreted to mean 'the ability to increase and maintain a high success rate in public examinations'. Some staff thought that,

'one of the three aims of the school, i.e. that each pupil should be taught so that they would reach their full potential, was being emphasised to the detriment of the other two, and that 'O' level passes in themselves was insufficient evidence to describe what it was being taken to describe, the realisation of potential by every individual.'

The Head's point seemed to be that a certain section were not reaching their full potential and in this view there was some agreement.

Two stand points were taken by the staff over this. One that the resources, time allocated, organisation and the Combined Science course was at the root of the problem; the other view that,

'to increase the passes the teaching approach would have to be different.

Reverting to a didactic approach would be more productive if less interesting than the stage managed heurism favoured by some staff. Traditional school science teaching, with its emphasis on the text book and chalk-and-talk methods, lecture demonstration and class practical work was the best means of transmitting content.'

Now this simple view did not stand comparison with classroom practice. Increasingly the Nuffield Combined Science was taught in the traditional way as has been described. The arrangement of the benches testified to this. The laboratory services were fixed on 'islands' about the room. Benches could be moved and butted to the island or together to produce variable working areas. The staff imposed a traditional laboratory lay out on each room. Demonstration bench near the blackboard in front of which were lines of parallel benches from front to back of the room.

"I don't like the new laboratories. There is no focal point. The benches are unstable and I do miss the platform. When the class is a large one, you can't see who is at the back." (A graduate biologist)

The point being that the laboratories were designed with a different concept of science teaching in mind than the speaker had. But this was true of the Headmaster and some of the science staff. The Head's response to the appeal for more resources for the department was to say, 'yes, providing the money is used for text books'. We see that by accepting examination results as valid summative evaluation it in turn dictates the functioning curriculum.

### CONFLICTING VIEWS AS TO WHAT THE EVALUATION INSTRUMENTS INDICATED

The reasons given by the staff for the low examination performances were only the partial truth. The Head of Science saw the problem more in terms of

"the personnel and the conflicting expectations being placed on his staff.

First of all the objectives had not been specified certainly those to do with academic attainment. Secondly the staff were unprepared for the curriculum package that had been taken up. Thirdly the previous education and training of the staff ill fitted them for the task to be faced. Fourthly the organisational structure of Head of Department, in charge of Biology, in charge of Chemistry bore very little relationship to the work to be performed".

From the beginning of the life of the new school, these difficulties affected its development particularly the science department. The staff were not all hand picked. The Governors and Authority were obliged to employ all the staff. Salaries were safe guarded. But because two secondary modern schools were merged into one there were two staff hierarchies and traditions. Staff teams which had been constituted to function in two quite different non-selective schools having quite different cultures and traditions. Now staff were placed in new positions within a new structure. Old relationships, loyalties continued until a new identity and team spirit was developed. One Head of Science became Director of Studies, another, second in charge of the department and in charge of Physics. The new Head of Science, a young graduate biologist was an outsider. He joined the school, coming from an 11-18 comprehensive school in London. The rest of the staff were drawn from the original secondary modern schools, one graduate biologist also Head of House, an English teacher having a second subject Biology, a teacher of Rural Science, a young teacher of Physical Science who had failed his degree course at Bath University.



The problems facing the department in the first year were numerous. They had to contend with: a split site, unfinished laboratories, extra senior pupils as a result of raising the school leaving age, the first comprehensive intake, a new science curriculum, a divided staff having low morale, new and increased organisational and administrative structure, just to mention a few. The first Head of Department had to make decisions before having an opportunity to get to know his staff, the school or the full extent of the problems. His science curriculum plan was to be two years of Nuffield Combined Science, one year of Physics, Chemistry and Biology followed by a range of two year courses in the pure sciences as well as rural science, human biology and child care. A large sum of money had been set aside with which to purchase the equipment. The suppliers Griffin and George were contacted and on request sent lists of the apparatus required to mount Nuffield Combined, Physics, Biology and Chemistry courses along with some of the secondary science course material. The orders were placed in the summer holidays but it took almost twelve months before all the ordered apparatus arrived. This meant that in the first year because much of the equipment was not available problems were contained rather than solved. Maintaining discipline and control in class was a priority, the teaching strategy was one of survival.

Nuffield Combined Science was new to all except the new Head of Science. Pupils were placed in mixed ability class groups requiring a teaching style quite different from that with which the staff were familiar - resource based learning. Each member of staff was given the teachers' guides and sets of activity books were made available. They were expected to get on with the teaching with little if any guidance. The route through the course for each class was mapped out, the apparatus and content prescribed but the new philosophy underlying the scheme remained hidden, the pedagogy of guided discovery was something quite new. As we have seen the problems were particularly acute for those of the staff who had little knowledge outside of their own discipline. Much time was required in which to get used to the apparatus, new ideas and books. Much was startlingly new. Quickly it was realised that the 'Orange Book' provided a reasonable text. No text book for the pupils was published as the course was based on experience through the sequence of activities which made up each of the ten sections. The experiments under each topic were performed and results obtained, but the conclusion was left to the teacher, as was the development of theory. This method was the reverse of that often required of teachers. A syllabus sets out the content and the teacher is expected to devise experiments and a course so that pupils come to know and understand the content. To what extent could the examination results at 'O' level be accepted as a means of evaluating the effectiveness of the science department was being asked by the staff. They felt that administration was forgetful of the problems they had faced and overcome.

Much informal in-service education took place. No provision was made for this. Staff helped each other by sharing knowledge gained by experience. Not that this was an easy or smooth process; it had its moments of frustration even tears. But learning was not confined to the subject, it extended to the operation of an administrative structure set up by management to co-ordinate the activities of the different functional groups and departments. Staff were

“enmeshed in this all pervasive network”. “Previously things had been much simpler, the Headmaster, Deputy Headmaster, and Senior Master and Head of Departments meetings were few and far between, usually chaired by the Headmaster, but everyone went along irrespective of rank.” (Assistant teacher)

The transition to separate centres of power within different ambits such as Head of Department, House meetings, staff meetings, with agendas, minutes and consultative documents penetrated every area of school life. It became necessary to understand the system, acquire skills with which to use it to gain representation, put forward your department's case and influence those who could bestow favours and make resources available. Some came to be interested in the system as such, others considered 'its formality and procedures as obstacles and hindrances to the task of teaching'. In time secondary adjustment was made and the set up came to be accepted and valued in its own right as it contributed to integration of the separate parts, facilitated and clarified procedures for resolution of difficulties and supported the teacher in his task. However many 'lamented the passing of a smaller school when the staff room was one where all members met together'. Much of the teacher's time was now taken in completing administrative tasks. Did this not have an adverse affect, or at least reduce the time required for preparing, marking and doing work more directly connected with teaching? As we saw, an analysis of the pupil contact time for different members of staff showed up the diminished contact time the senior staff had with the pupils. And furthermore was not the promotion structure partly responsible for this state of affairs? The brunt of the teaching load was carried by the younger less experienced teachers.

Arising from these bureaucratic considerations comes another point often put by those who supported separate subject sciences and the small is beautiful ideology. (Schumacher : 1973) The same teacher can see a class from the first year to the fifth. Responsibility is therefore total in the subject. Where a class is taught by different staff in the first three years, say by different biologists, then the elements of chemistry may well not have been taught. A large department depends on each member acting responsibly and playing their part by conforming to the departmental plans. Teachers increasingly are members of a team. To a degree this

has always been the case but it was even more so in this science department. Allied to these viewpoints is another. The Headmaster's graph showed results in the three sciences separately. Staff argued

"that in History and Mathematics the subject had been taught from the first year whereas in the sciences only for the last two years. Furthermore all subjects with the exception of the sciences had at least two periods per week. Even if a fraction of Nuffield combined science was allowed for, this was not so for the separate sciences. All pupils study combined science for two years but unless all the sciences are studied to examination standard no recognition for some of the science studied is granted. In the CSE examination, an examination in Physics say, consists of a basic science paper plus a special paper in Physics. Should not a similar pattern of examining exist for 'O' level?"

Clearly school science and the evaluation carried out by external examinations is out of gear. It is unlikely that the examination Boards will change, so why not change school science to fit the examinations? Once again we see that staff are aware of contradictions within the system. Curriculum developers and the examination boards are facing schools with packages which have been put together without beforehand coming to terms with each others differing viewpoint. (Berger et al : 1977) The schools are left to deal with these unresolved problems.

#### AIMS OF THE CURRICULUM INNOVATION DO NOT ACCORD WITH THE EVALUATION CARRIED OUT

"A myriad half tested assumptions are at the centre of many curricular practices, such as, it produces greater quantity and quality of scientific talent, ability grouping accelerates learning and encourages more rigorous use of higher mental processes, critical thinking is better taught in separate subjects. Failure to assess the effects of innovations against outcome has been the cause of the fact that in education curriculum revision proceeds by replacing one scheme with another and one approach with another, not necessarily because objective evidence has demonstrated the merits of one or the failures of the other, but merely because the new scheme or approach somehow has gained attention, is in fashion for the time being or is championed by forceful leaders." (Taba : 1962, p.315)

Why had the Nuffield Combined Science scheme been chosen? First and for most because it had been designed for the full ability range, and provided a sound base for later specialisation in the separate sciences to 'O' level standard. Other criteria are given in Alternatives for Science Education. Secondly the Head of Department was himself familiar with the scheme and had first hand experience of teaching it in a comprehensive school. More generally, the Director of

the Nuffield Foundation, puts it in his forward.

“When the Nuffield ‘O’ level courses were first planned early in 1962, it was not found possible to avoid the traditional division of school (grammar) science into three subjects. But it was agreed that a combined science course was most desirable, especially in the first two years - for children between the ages of 11 and 13. The need for this provision is now even greater: many secondary schools require a common course for pupils of all ranges of ability during the first two years, and ‘Combined Science’ is therefore called upon not only to combine three science subjects but also to be a preparation both for ‘O’ level work and for CSE or unexamined work later on.” (Young : 1970, p 1)

#### OTHER RESEARCH THREW DOUBT ON THE EFFECTIVENESS OF NUFFIELD COMBINED SCIENCE

It was not until 1976 that the scheme was evaluated in terms of teachers’ ratings of its suitability for use in comprehensive schools, which evidenced much satisfaction. (Charles : 1976) But in a study based on the testing of children’s understanding of the course a quite different conclusion was arrived at by M Shayer of Chelsea College.

“For 80% of the pupils studied, it seems that over half the time they were achieving insufficient penetration into the basic concepts.” (Shayer : 1978, p 221)

It would appear that the doubts expressed by the staff with regards the suitability of Combined Science were well founded. Had they identified a weakness in the curriculum in years one and two? Were their efforts to modify it intended to improve it or mould it to their own way of doing things?

## **CHAPTER IX**

### **CURRICULAR PROCESSES - ADJUSTING**

## STAFF RE-EDUCATED FORMALLY AND INFORMALLY DURING SECONDARY SOCIALISATION

The impact of changes on staff took other forms than attacking and finding fault with the scheme. Another reaction was to embark on a programme of re-education; two teachers studying with the Open University. What reasons motivated such action? First of all the simple fact of availability. But also a feeling of low status as an increasing number of young graduates joined the staff. It was easy to attract well qualified biologists to the department but there seemed to be a shortage of physical scientists. In these specialisms staff did not feel so threatened. A degree in these subjects would open up career possibilities. The teacher in charge of Chemistry did not take advantage of the credits allowed for a certificate in education because he had almost failed this subject in his teaching course and in any case it was a 'waffle' subject. The science course work was more straight forward and tangible 'and he didn't want a degree which was of use only in teaching'. For him it was 'a possible way out of teaching, a way of improving promotion prospects.'

Another teacher who had been overlooked for promotion put it down to her 'lack of a post graduate certificate in education'. She completed a part time two year course on management in education and began looking for deputy headteacher posts outside the school but within the county. The teacher in charge of Physics was seconded to a degree course containing elements of curriculum development. All this knowledge and learning came to be ploughed back into the department, helping to produce a better understanding of science education. Later staff were able to attend LEA short courses on Combined and Secondary Science but there was a certain reluctance, and again it was the same teachers who attended them. The longer courses improved career prospects, the short courses being more relevant having more to do with teaching the science courses established in the school.

Informally at morning break, lunch time and after school, the preparation room became a meeting place as well as a forum for discussion of current information and ideas. This would be set off by internal wrangles as well as articles in the local and national press or television, which had a bearing on secondary school science and technology. Increasingly staff were becoming aware of education 'as a political football'. This was deprecated by some but considered inevitable by others. Occasionally some immodest assertion offended the view of one of the audience and a dispute would develop. One or other of the contestants would have their leg pulled and equanimity would be restored. Others would simply not enter into the dispute by not speaking, not taking sides or quietly slipping away. Knowledge of each other meant that such situations could be skillfully avoided and would be for the sake of keeping

the peace. However some of the relationships between the more aggressive and self assertive resulted in skirmishes. Newcomers such as students were often unaware of these under-currents. A young, intense, serious minded idealist, came to grief several times before she realised that she was being 'set up'. In time she learned which subjects to avoid and developed a less rigid sense of right and wrong. Taking the side of the individual pupil against some aspect of the system of grading led to isolation. Imperfections were considered to be part and parcel of any system. "Energies directed against the system are wasted if solutions cannot be put forward."

The closely knit work group acted to curb any excesses or extremes of the individual. Conduct had to conform to the normative standards which the group had come to construct through negotiative interaction. Thus the alternative definitions given by prestigious outside persons or groups had to contend with the internal definitions held by the participants. Outside views were treated with scepticism or even disdain. To persuade them otherwise required an understanding of their problems as they saw them. The Head of Department had to mediate the views of the Headmaster interpreting them in the context of the department's operating consensus.

Life in this small group was cosy and secure when an accepted place was earned amongst the members. The technician, and the Head of Biology ran the 'tea swindle' and arranged the end of term 'eat ins'; another controlled and ensured the department always had plenty of stationery, Stella kept an eye on the Nuffield Activity guides and saw that the books were checked in at end of term; the chemist was the minuting secretary at departmental meetings; a biologist looked after first aid. These were all 'voluntary activities' which helped colleagues in their work or provided a service. To take all or any of these for granted or fail to contribute, led to disapproval. Failure to put the kettle on or make the coffee if free before break would draw a caustic comment. At times the intimacy of such group life would generate a feeling of claustrophobia. A member would retire to their own room or go over to the main staffroom. One of the staff regularly did this. To the others life was so centred on the department that connections with those outside had almost been completely severed. So much so that to appear in other staffroom space would be met with, 'Hello stranger, what can we do for you?' Here, friendships not based on the department would be the entry ticket. Perhaps a member of department was taking a Saturday away team, or helping with stage lights for the next production, or had some other interest such as painting or music which brought people together drawn from different departments.

## ATTITUDES OF OTHERS TO THE SCIENCE DEPARTMENT

When outsiders entered departmental territory there was always a noted change. The usual ease would vanish and be replaced by guarded comments and formalities. It was as though 'there was a spy in the camp'. It was unusual for courtesy visits to be made certainly from members of other departments. Such a visit usually 'spelt trouble' or someone wanting something.

How do outsiders regard such groups, certainly as closed, strange and alien. This was more so for the science department, their specialism seemed to cut them off from mere mortals. This feeling was enhanced by the features of the setting, benches, flames, bottles, pipes, ovens, white coats, chickens, rats, ripple tanks and signal generators arranged in profusion. A veritable mine field for those ignorant of the subject. The scientists were regarded as modern, materialistic and remote. Their subject isolated them, but out of this isolation came a solidarity of interest, keeping members in and non-members out.

The department had a reputation for 'no nonsense, forthrightness'. An excessive concern for the facts and less for people, they valued science - its short history but enormous achievements, its spirit of inquiry and a degree of non-conformity. Of course such a view is a stereotype but nevertheless there are those in the department who cultivated it. An incident is recalled which will serve to illustrate the attitude of the outsider to the department. One of the physical education staff had brought in a geometrical puzzle which had been given to her young child at Christmas. The family couldn't solve the puzzle, so it was brought in to the science department. The puzzle sat there on the central bench and staff to while away a moment or two would shuffle the pieces. For some days this went on, various theories, topological, geometrical or colour factor were put forward and tested, but always the last piece would not fit. After school one evening came a lad from the neighbouring primary school waiting to be picked up and taken home by his father who taught in the department. The lad picked up the puzzle, without the slightest hesitation putting it together correctly. The staff present were at first dumb-founded. Then the silence broke with hoots of laughter as the effort and theories of colleagues had one by one come to grief after so much thinking. Two days later the completed puzzle was collected by its owner. She was not surprised. She told us of other departments that had failed to put the pieces together and simply would not believe the truth of the matter. This for her confirmed her belief in scientists as 'exceptional characters with great powers of puzzle solving!'



Returning to the question of the poor showing in the external examinations. The biologists made a suggestion 'that in future the best biologists would be entered for human biology as well so the number of passes would rise'. What cost this would be to the candidates was not considered. All that they said was 'that it would give them an extra 'O' level pass without too much extra work. From the biology department's and the school's point of view it would improve the statistics'.

## EFFORTS TO ALTER GROUPS TO IMPROVE TEACHING AND LEARNING

The decision of management to form course Ex of the most gifted pupils in the fourth and fifth years was supported by the department for several reasons. One reason was 'that this elite group would be pushed hard, members of the class would compete with each other and so high standards would be reached'. In practice this was not the case. Some of the boys in the class who were in the first rugby team had other views. They lowered the level of work which staff expected forming an anti-work culture based on having 'fun'. Girls in the same class were distracted from work similarly. Whilst behaviour in class was quite good, more often members of the 'fun culture' were looking for laughs, never getting on with the task, irregular in their homeworks. 'They seemed to have little self discipline required for the maintenance of effort, pace required to cope with ten 'O' levels'. Was it that practical work in science was a release from pressures elsewhere in other classrooms? The science results pointed to this. But the teachers of course Ex in the science department were not alone in this view: in History and English the view was echoed. The Headmaster took heed and introduced what he called a 'short' and 'quick report'. These were pages similar in design to those in the school report book. No comment was required, instead an effort mark and what grade standard in terms of the 'O' level (A-E) the pupil was working to. These short reports were filled in monthly, a quick report recording teachers' comments could be provided in an emergency. This was to alert the parents to the low level of achievement of the pupils so that they could exert pressure at home. The parents were seen 'as partners of the staff in educating pupils particularly in terms of instilling discipline'.

## ATTEMPTS TO IMPROVE PERFORMANCE BY RECRUITING 'BETTER' STAFF

In spite of these changes they did not touch the main problem only perhaps some of the results and consequences. The Head of Science saw the problem in terms of the staffing, numbers and balance. Home Economics teachers, physical education staff had all been recruited to the science department 'to keep the subject going'. Team teaching had been resorted to as an expediency because there were insufficient science staff. The experience proved 'a shattering one' and so was given up gladly and with much relief.

These thoughts were shared with the Headmaster who was particularly sympathetic. But he held a slightly different view point which he did not articulate but showed in his staffing policy. The key to his perception of the problem was 'the quality of the staff'. He considered the better performance of a neighbouring school which was formerly a grammar school was put down to the quality of the staff inherited. We shall see what quality of staff meant to the Head as his staffing policy is observed. When a vacancy occurred the advertisement was drawn up by the Headmaster in consultation with the Head of Department. The Head asked 'what there was about the advertisements for science posts which drew so few good quality applicants, and also why there were always so few applicants from other local secondary schools'. He felt 'a communicant member of the Church of England' should go and be replaced by 'in sympathy with the aims of a Church school'. Furthermore he regretted that 'the school had no Sixth form and considered this to be an added disincentive to well qualified science staff'. When scale I science posts, particularly in the physical sciences, were advertised, rarely were there more than half a dozen applicants amongst whom not one would be a bona fide physics teacher. Clearly there was a shortage of teachers of physical science and those that there were, were able to pick and choose better paid positions. This was borne out by the facts.

When the Head of Science post became vacant over forty applications were received including three holding the degree of PhD. The eliminating round of producing a 'short list' gave some idea of the criteria used by the Headmaster in determining an applicant of 'quality'. Under qualifications he included a degree in physical science obtained by full-time study at a university, with a post-graduate certificate in education, other routes were considered second best and these applicants were rejected. Experience, the other major criterion, was deemed to be 'good' if it had been in a selective prestigious secondary school. But was followed up in the interview to make sure the candidates' attitude to a comprehensive school were positive. Because special papers studied in the degree had little meaning for the Headmaster - he was a historian - 'the subjects and grades obtained at 'A' level were considered by him to be the most telling'. The basis for these judgements as they became clear, ruled against the internal candidate who had only recently gained a BA in Chemistry from the Open University. Whether these criteria had been used solely to exclude him must remain an unanswerable question, but it was suspected by the person concerned. (Glaser and Strauss : 1965) Before the interview the Head had favoured appointing a candidate with a degree in Chemistry. If the person had been appointed, then the teacher in charge of Chemistry would have been relegated. At another interview later in the term a 'strong candidate' had applied for a position in Physics. If these two people had been appointed then there would have been a strengthening of the physical sciences. The teacher in charge of Chemistry would then have to emphasise his Head of House responsibilities, his position in the science department having been undermined. In the event this strategy

didn't work out as planned. The Head seemed to be saying that 'the teacher in charge of Chemistry in choosing to become Head of House, could not combine this with being Head of Science'. In any case he had made a good contribution to the discipline, parent relations and fund raising since he became one of the pastoral care team. Also one of the graduate biologists who was prepared to be Head of Science and Head of House on scale IV had been turned down on a previous occasion. To have considered the teacher in charge of Chemistry would have been 'inconsistent with established policy' and if carried out would have 'set a precedent', angered a member of staff in the science department or created a vacancy as Head of House. In applying for a House job the teacher in charge of Chemistry had surrendered the possibility of promotion within the science department in the school. This is the interpretation the departing Head of Science placed on the sequence of events.

The day of the interview was fixed and the names of the candidates posted. Their qualifications were impressive. In the morning the candidates gathered in the Headmaster's study and over coffee were told of the day's arrangements. The Headmaster and Head of Science seemed more nervous than the candidates. One arrived late, the Headmaster accepting his apology added that 'it was understandable as he had such a long journey'. The candidate denied this and said that 'he had only travelled up from Oxford that morning as a friend of his, Professor Black, had kindly put him up for the night'. At this there was a prolonged silence whereupon the Headmaster handed out a programme of the day's events, clarifying one or two points. Before lunch there were guided tours of the school, conducted by the Deputy Heads, an opportunity to meet the science staff, and then a series of one to one interviews with Headmaster, Local Science Inspector and Head of Science. In the afternoon the main interview was held in the town hall.

For appointments below scale IV the Headmaster, Chairman of the Governors and appointments committee, along with the head of subject department met in the Head's study. The chairman of the interview panel was vice-chairman of governors, vicar of the local parish and one time public school master. Others on the panel included a retired managing director of a local firm, the diocesan director of education, another free church cleric and a retired teacher nominated by the church as a governor of the school. Church governors were in a 2 to 1 ratio in this aided school.

The pattern of interview was invariable. The chairman first of all going through the details on the application form, seeking clarification of any ambiguities and checking on surprising facts. For example, why a candidate had changed from one career to another, or only had spent a very short time at a school. This preamble was followed by more detailed questioning. Each member

of the committee exploring one particular field, religious convictions, interests and hobbies, family and housing, subject and teaching, organisation of this and other schools, the place of science in the whole curriculum, or developments within science teaching generally. Because none of the committee had any knowledge of science teaching the Head of Department was asked to concentrate his questions on narrow 'professional issues'. Most of the questions were so posed as to give the candidate an opportunity to reveal his personality and general philosophy of life and thoughts about teaching. The differences here were considerable. Some of the questions would be more detailed and specific: 'How would you square evolutionary theory with christian belief?' often had biologists floundering. One question asked of three applicants for a Physics post drew some surprising answers. 'Imagine a thick fourth year boy has asked you to explain what a quark was, what would your answer be?' One candidate, a chemist by training and qualifications, simply did not recognise the word. He began talking about personality traits to the quiet embarrassment of all present. Another candidate bluffing with all the confidence of a commercial traveller who believes in his own patter, turned on the questioner and said, 'Come, come, Sir, you have been watching too much television'. At this everyone laughed together. The TV programme had been on only the night before and had attempted to deal with particle physics. The question had been asked by a cleric who had a low opinion of science. He had assumed that some pupils ask such questions or watch such programmes. The cleric had an interest in developments within science as he thought they challenged his orthodoxy.

After the candidates left the room each committee member was asked to give an appraisal of each candidate. The Head of Science was asked to withdraw while the committee deliberated. The concern of the members was to appoint 'an enthusiastic person, not complacent but open to other's views and beliefs'. They did not seem to realise the enormous range of ability in school and emphasised intellect and ability to teach 'high fliers'. However in every case they supported the candidate favoured by the Head of Science, and only one would not appoint anyone, insisting that the post be readvertised. This was taken as a measure of their trust in the Headmaster and the Head of Science's judgement.

The Head of Department's brief was to question the candidates about the science curriculum, teaching methods and principles of grouping and grading pupils. Whilst the questions were 'more down to earth' it was surprising how limited the answers were. Setting of pupils was given in most cases as the most sensible and natural way of coping with individual differences of ability of development. Guided discovery as a teaching method was given little credibility. Discipline a central concern of all teachers was considered by the governors as a secondary issue. The assumption seemed to be 'that science, providing it was well taught was naturally interesting to all pupils'. Indiscipline therefore arises from poor teaching. A view not equally shared by

teachers of science. 'A superficial attraction exists but when it means getting down to some hard work, interpretation of results and drawing conclusions, curiosity and stamina goes'. 'Young, well qualified, enthusiastic specialists' seemed to be the Head's and the Governors' model of the ideal teacher. This inside view from the perspective of the Governors and the Headmaster is seen differently by the candidates. Interview experience is often a topic of conversation, particularly when an appointment to the department is being made. The practical exigencies of teaching, 'good discipline, knowledge of the curriculum package, similar experience to the present incumbent, sympathy with the aims of the 'chalk face' teacher were paramount. Concern with theology and biology and particle physics seems a long way from teaching Archimedes' principle, how to balance an equation or naming the parts of an insect'. They felt that they were 'being interviewed by amateurs who did not always have a high regard for the teacher in the classroom'. One teacher recalled that 'after being offered the job, one of the Governors invited him to join them for tea and biscuits. The chairman noticed this and asked him to leave the room, seemingly impatient to get on with the incompleting business. He took the half drunk cup of tea with him, it now being a prize trophy to commemorate his appointment to the staff, taking its place among the other mugs on the tray reserved for staff!'

The staff collectively came to understand the Head's and the Governors' staffing policy. They wished to appoint 'bright boys' or 'whizz kids'. This understanding came about as much from the staff's own view of themselves as non-graduate teachers as from the policy itself. The Head of Department was in an important position to influence appointments. As we have seen, he was aiming to build a team, that would work together, offer the skill and expertise to teach the specialists subjects in the upper school, be willing to teach across the subjects in the lower school, share in the teaching of the least and most able and accept a degree of stage managed humourism in teaching approach, as well as believing in the value of science as a component in the education of all for the full five years. He had gained entry to the interview room. But not surprisingly discrepant views were held by these different interview panel members.

#### THE SUB-CULTURE OF THE DEPARTMENT AND PRESSURES TO MAKE NEWCOMERS CONFORM

Once a teacher was appointed to the department the rest of the staff imperceptibly began to 'educate' the new member through secondary socialisation processes as earlier described. So the situational factors as well as the dominant sub-culture with its set of norms, values and beliefs began to produce conformity. One deviant, who dissociated herself from the group by attaching herself to a central staffroom disgruntled group, remained unaffected. Another physicist, who came with high hopes, left after one term having been offered a scale III post in a local direct grant school teaching sixth form physics.

The 'induction process' for the newcomer was one of first of all getting to know the system. Written instructions setting out how the teaching groups were organised, the content and periods allocated to each form, the layout of the laboratory, the teachers' timetable, responsibility for care and maintenance of laboratory, availability and ordering apparatus, introduction to who to consult about the work, pupils' work and progress. On top of this was the school policy and division of responsibilities. Much of this was in the handbook but more was conveyed by the spoken than the written word. Written procedures ruled but not absolutely. Modifications by the way of short cuts and adjustments were made by the staff as they learnt the newcomer sub-culture. (Becker et al : 1961) Some of these practices would be passed on to the new member to help them to cope with the job, sometimes with the intention of minimising the job, other times with the intention of subverting the system. The norms were quickly learned, with few challenges to the accepted way of going on. The laboratory technician acted as a go between easing friction, communicating good practice, keeping all in the picture and in step. The prep room was a place where help could be gained. Misunderstandings became known, would be gently corrected. Status was accorded to those who helped as much as to those who held office or expertise in a subject.

There was little need for formal meetings because staff rarely left the department unless going to the main staffroom to fetch mail from 'the pigeon hole' or to collect or return their keys at the end of day. This practice diminished as a 'dud' key was placed on the nail instead, and one member of staff would read central notices, report back as act as 'postman'. Life in the department was lived in smaller groups than that of the whole department. These depended upon their formation or occurrence of free periods, lunch time eating habits, membership of different houses and interests such as mountaineering, drama or boating. When a science department meeting was called the whole department met. This was to bring the different cliques together in the formulation of joint action, so integrating individual efforts, particularly at 'busy times' such as report writing, mock examinations, prior to parents' evenings, and team efforts carried out such as exhibitions for open day. These meetings brought into the open, divisions which existed. They provided opportunities for minor skirmishes and clashes as well as briefings and the laying of plans for united front when facing management. School policy could be spelt out and its consequences for the department could be examined. The department was responsive to the requests of members but the greater collective experience and knowledge of the members was a moderating influence on extremes. Through the Director of Studies, a biologist, familiarity with management's thinking could be discerned although in her presence there was a noted hesitancy (Lofland : 1966) and unwillingness to divulge department secrets. Her 'loyalties were considered to be elsewhere'.

## NO COMMON AGREEMENT ON GOALS, MEANS, OR WAYS OF EVALUATING THEM BY THE GROUPS OCCUPYING DIFFERENT PROFESSIONAL ARENAS

We have seen that within the department no consensus existed on objectives. On the contrary conflicting definitions of the objectives existed which continually caused disagreement. This disagreement centred on the content of the curriculum - scientific knowledge. Should it be taught in an integrated or separate subject form? Departmental organisational structure was based on subjects, in spite of the fact that the first three years of science did not recognise subject divisions. Furthermore the teaching approach prescribed in the combined science emphasised two other important factors. One factor was 'science for all', and the other was a modified form of 'stage managed heurism'. This approach was not even recognised by some of the staff. They dealt with the content of combined science and taught it in the way in which they were most familiar, that is by didactic methods. Being concerned to cover each section of the scheme they were frustrated in this endeavour by the slower pace in many of the lower sets. The message had not been conveyed by the Head of Department to his colleagues, the science staff or members of management particularly the Headmaster, and if it had it was not understood. The move toward setting pupils failed to recognise the importance of individual and group work in the exploration process and the resource based teaching which was necessary and initially being set up. Indeed the cut back in provision made the curriculum plan impossible to implement if the understanding and will to innovate had been there. The Headmaster's insistence on the use of scarce resources for the purchase of text books revealed his awareness of the increasing reduction in capitation allowance but at the same time revealed ignorance of the conflicts built into science education. The Director of Studies being a science teacher informed the Headmaster of her view of science teaching which 'reflected the traditional approach'. Her influence was greater owing to her central position, closeness, and experience as well as her qualifications.

Again the external examination system particularly the General Certificate of Education carried much weight. Yet success in this system is dependent upon a set of objectives to do with having knowledge of content. A different set of objectives were in evidence for combined science. The emphasis had shifted from knowledge in terms of content of knowledge in terms of a scientific methodology. These objectives form the basis of evaluation, but as we see the objectives of Nuffield Science and those looked for in the examination were not the same. The results were correspondingly disappointing to the Head but explainable in other terms than the failure of the pupils to learn science. Those powerful groups such as the examination Boards, curriculum developers, Schools' council, HMI are attempting contradictory things because there is insufficient agreement over objectives. Until their differences are resolved there will be a

degree of confusion. In the meantime summative evaluation will indicate under performance but the indications may well arise merely from the failure of the formative evaluation instrument to measure what the school is doing. (Wiseman and Pidgeon : 1970) The time has arrived when a clear statement of content and methodology which together constitute scientific knowledge can be given in terms of the objectives of the science curriculum. Then instruments of evaluation can be designed to measure accurately and reliably pupils' scientific knowledge.



## SUMMARY OF THE RESULTS

1. Under pressure of time crucial curriculum decisions were hurried through without prior consultation and agreement. The first Head of Department introduced science courses with which he was familiar but other staff unfamiliar. Substantial cash resources were made available by the Local Education Authority but a time limit was placed on utilisation of these resources. Teaching equipment was not supplied until after the new school was opened and operating.
2. The organisational structure devised by the Headmaster did not match the requirements for implementation of the science curriculum. The former emphasised responsibility for subject divisions within science, the latter the unity of science.
3. The new science block - laboratories, central preparation room and office - where rephotographic facilities were available. The services of technicians were reduced as part of the L.E.A. cut back and a change in policy which allowed Heads to re-deploy them in other ways.
4. The merger of a mixed and a girls' secondary modern school caused at first an imbalance in the number of boys and girls in the newly formed comprehensive school. A disproportionate quantity of available resources had to be used initially for the science education of girls. They had opted for the biological sciences in the fourth and fifth years, having had little education in Physics and Chemistry in the first three years at St Mary's School.
5. An imbalance in specialist science staff developed as equal numbers of boys and girls made up the first year intakes. With the introduction of the 'ring fence policy' by the Local Authority and their insistence on a reduction being brought about in 'overstaffed' schools, it became impossible to replace staff who left the science department. Teachers not trained in science were re-deployed in the science department. Thus the team teaching expediency.
6. At first promotion was internal. The Local Authority had insisted that all staff employed in the secondary modern schools would be appointed to the staff of the comprehensive school. The 'ring fence' and 'overstaffing' policies continued this trend. When these restrictions were removed job competition increased. Qualifications and suitable

**CHAPTER X**

**SUMMARY AND CONCLUSIONS**

experience became important, if one was to further one's career. Efforts were made to improve qualifications and review career directions. Career development was not so much concerned with the science curriculum as with improving science qualifications.

7. Coping with the demands placed on them in teaching Nuffield Combined Science, whether by accommodation or assimilation, took various forms. First of all by teaching in the usual way, by subdividing it into Physics, Chemistry and Biology content to be taught by subject specialists, demanding a statement of content and principles which the experimental results added up to, insisting on examination questions requiring factual re-call instead of multiple choice type reasoning questions, and a concise statement of what the pupils should have learnt from each of the sections. The philosophy behind Nuffield was not appreciated or accepted by all.
8. Three ideologies have been identified. (1) Stage managed heurism emphasising practical work and 'guided discovery'. The methodology of an idealised research scientist employing a combination of the falsification principle of Popper and the normal/revolutionary paradigm of Kuhn. (2) The second ideology involves logical development of the subject, worked examples, rigour, and practical work intended to infer or more strongly verify. The practical note book, demonstrations, use of a text book, were part and parcel of this ideology. (3) The third ideology is more general in that it encompasses knowledge rather than one division of it - science. It is a set of beliefs at the foundation of the established secondary school system, its curriculum, principles of management and organisation. It was one held more strongly by management.
9. Acceptance of one or another of these ideologies entails a commitment to a set of practices. Stage managed heurism emphasised individual and small group activities, interest and self motivation of the learner, whereas holders of the second ideology favoured teacher instruction. The teacher imparts knowledge. Teaching in mixed ability groups using resource based learning techniques is the preferred teaching style of the first category of idealogue, whereas a setted group receiving a common lesson, that of the second.

The aims and objectives of management express rhetorically the established ideological view of teacher administrators. These were to 'identify talent', allow each individual 'to reach his full potential' and the achievement of 'academic excellence', through subject teaching.

10. Much evidence has been presented which suggests that rationalisation has resulted in a high degree of bureaucratisation, the teacher role becoming highly differentiated. Administrative posts within management commanded more status and power to influence events. Classroom teaching was placed at the lower end of the status hierarchy.
11. The meeting has become the institutionalised means for separate interest groups to meet face to face. The written word, whether on an agenda, minutes, discussion papers, or curriculum proposals replaced more informal means.
12. Several functional groups crystallised out from the large staff: departmental, house, or management teams. Each group inhabiting a locale with separate and distinct professional concerns. Group members carry the professional ideologies which serve to legitimate rank, status, privileges and functions.
13. Horizontal factions competed for management's sympathetic ear while at the same time noticed any favours bestowed on others. This was the case when it came to career opportunities or the awarding of above-scale posts. Inconsistency was a source of dissatisfaction. Was promotion to be on the basis of a departmental establishment or on the basis of individual merit?
14. Professional autonomy has been reduced, due to specialisation. What he teaches, how he teaches, control of pupils and pastoral care have become the concern not just of the Headmaster but a whole range of other teachers. Curriculum policy was established in the 'upper echelons' of the hierarchy, the Director of Studies allotting time, the Head material and human resources, Head of Department being responsible for implementation, monitoring and internal formative evaluation.
15. 'Making fun', by joking and ridiculing the system provided relief and some compensation from de-personalising forces and stressful situations, arising from ideological disputes and bureaucratic restrictions. Excessive zeal, idealism or commitment were pilloried until moderation prevailed. By a process of secondary adjustment, the student, new appointee, or non-conformist were brought to accept the sub-culture of a group, its views if not its values and beliefs. Holders of any such disparate views learned quickly to keep them in check or to seek out other sympathisers forming cliques. There were consequences for the individual teacher in this, in terms of career. Knowledge of such cliques and their members' attitudes were revealed in their words and actions.

16. The primary concern of the department was providing an education in science (however conceived) attempting to bring it about within the framework set and the constraints arising from the situation. Much of the extra work done in mounting displays and exhibitions was considered by some members of the department to be 'mere window dressing'. Management saw it as a public relations exercise aimed at projecting an image of the school as a traditional academic institution.

## CONCLUSIONS

1. Different groups of teachers have been identified, occupying different levels in the organisational structure, at different stages in their teaching careers, inhabiting different locales, performing different functions, legitimated by differing ideologies. Two such groups were the focus of this study.
2. The Headmaster, two deputies in charge of pastoral care, one deputy in charge of personnel and communications, and the Director of Studies together made up the management group housed in offices within the administrative block. The apex of the hierarchial pyramid. Another group made its base the preparation room and office in the science block. This group consists of the Head of Department, teacher in charge of Chemistry, the second in command who was also in charge of Physics, six assistant science teachers and two laboratory technicians. This group was but one of several concerned with one knowledge area of the total curriculum. No one teacher was in overall charge of Nuffield Combined Science. Thus the formal structure of posts did not correspond with the operational curriculum.
3. Positions in management represent a more advanced stage in career. Deputy Head-teachers in charge of pastoral care being recruited from the lower Head of House positions, while the position of Director of Studies was the next step after being a Head of an academic department. Future headship was open to all other management team members irrespective of their route to the top. Head of Department position was via the route of assistant science teacher, teacher in charge of a science subject. Thus a clearly defined career structure existed leading from subject teacher to Headship.

Frustration experienced by some members of the science department can be explained in terms of changed career prospects. At first there were internal promotions on the merger of the two schools and when the ring fence policy was established. A management decision to re-structure house and academic departments resulted in the loss of a scale III second in charge of science post. This change was brought about to reduce discontent coming from house staff.

4. The activities of these two groups were studied as they negotiated the limits of the science curriculum. These negotiations were about allotted time, material and human resources. Knowledge of the total school capitation allowance, and the school's

staffing establishment was withheld from those outside of the management group; so was knowledge of the resources allocated to each department. This control of information divided Head of Departments and allowed the Head to exercise control. Attempts to find out more about other departments' staffing, size of teaching group, allowances, from the Headmaster were of no avail. Head of Departments when questioned at a departmental meeting tacitly agreed with the Head's policy by their silence. However, through influence, and communicating the needs of the department directly, not in formal meetings, improvements came. But these were conditional as was seen, e.g. allowances to buy text books.

5. Management's professional administrative ideology was given objectivity in the organisational chart and structure it set up and the means it employed to ensure that its objectives were realised. Through initiation of structure the academic achievement of the school in terms of external examination results was stressed. Prize giving, formal examinations, course supervision, quick and regular reports were some of the methods used.
6. Within the science department disagreement existed over means of achieving ends. The first Head of Department had introduced Nuffield Combined Science, mixed ability grouping, resource based learning and a teaching style emphasising guided discovery. The rest of the staff were unfamiliar with the content, style and underlying philosophy of the scheme. Instead of confident relaxed teacher, master of his subject and recognised as such, now the novice learner. The change produced, as (Bion : 1961) had observed in one of his studies, created a crisis of identity resulting in various responses, flight and fight, dependence and pairing. In this small work groups members were in a continual struggle between the wish to learn by experience which was conscious, rational and sophisticated and the wish to take refuge in basic assumptions, a wish that was irrational, unconscious and naive.
7. Two polar types of ideology based on different conceptualisations of pupil action, knowledge, learning and teaching role were evident. One supported by the Head of Department and other teachers having similar educational background. They were teachers who had studied three 'A' level sciences at grammar school, not necessarily all successfully, and had then undergone a period of teacher training. Some had heard about Nuffield sciences, younger members had some experience of them. The opposing view was put by a graduate biologist who was instrumental in bringing about many of the modifications in Nuffield previously described. It would appear that

those amongst the science department staff who were less qualified academically were more prepared to accept alternative approaches and innovation.

8. When examination results showed a down turn, Nuffield science was in part blamed. It was argued by some that pupils did not get to 'know the facts and principles'. All necessary if pupils were to 'do well' in the external examinations. The supporters thought otherwise. The fault lay with some of the staff who failed to understand and so teach Nuffield in the way intended by the course developers. Furthermore size of teaching group, material resources, staff and technicians were insufficient in number. Reductions in these compartments were brought about by management and cut backs in expenditure brought about by the Local Education Authority. They failed to understand the requirements of the science department if it was to maintain the Nuffield approach.
9. The analysis of the phases and episodes making up the curriculum process led to an understanding of the functions of each of the two groups. Formulation was largely a management function. Implementation, monitoring and formative evaluation departmental functions. The strains built into the curriculum formula constrained subsequent departmental possibilities. Summative evaluation emphasised a certain set of objectives not equally emphasised or valued by exponents of the progressive science teaching ideology. Because summative evaluation carried out by University Examination Boards was the most powerful legitimisation of a department's effectiveness, examination results could not be ignored. So there were pressures on the department to take the necessary action to improve results. This was interpreted to mean a return to traditional science teaching. To do this was not easy for the reasons given and the pragmatic one that the reference books and science kits could not be used other than as originally planned in the Nuffield Combined Science curriculum package.
10. Through his staffing policy, the Headmaster influenced by the Director of Studies, appointed staff who owed allegiance to traditional science teaching and methods of organisation. Staff who were more concerned with boys and girls of high ability, thus human and material resources were deployed for the benefit of pupils in the upper sets. Science for the majority was to be a watered down version of that provided for the minority.



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# APPENDIX I

## THE SCIENCE DEPARTMENT - BIOGRAPHICAL DETAILS

Type of School Attended	Age	Position	Education/Training	Qualifications	Subjects	Personal Experience
Independent	29	Head of Science	T. College/University	Cert.Ed., B.A.	Biol/Education	i/c Biol 11-18 Comp
G.S.	41	2nd i/c Sc & Phys	College/University	Cert.Ed., B.Ed.	Phys/Soc.Ed.	St John's Sec Mod
Direct Grant G.S.	31	i/c Chemistry	College/University	Cert.Ed., B.A.	Chem/Ed.	St John's Sec Mod
G.S.	43	Physical Science	College/University	Cert.Ed., B.A.	Science/Ed.	Girls' Sec Mod
G.S.	55	Science	College	Cert.Ed.	Physical Science/Ed.	First post
G.S.	34	Sc/Biol	College	Cert.Ed.	Biol/Geog/Ed.	St John's
G.S.	36	Sc/Biol	College	Cert.Ed.	Biol/Maths/Ed.	St John's/St Mary's
G.S.	42	Sc/Biol	University	B.Sc.	Biol/Ed.	St Mary's
G.S.	28	Sc/Biol	College	Cert.Ed.	Biol/Eng/Ed	St Mary's
Technicians						
G.S.	49	1st Technician	Tech. College	City & Guilds	Physics	St John's
G.S.	44	2nd Technician	Tech. College	College Cert.	Biology	St Mary's
Management						
G.S.	60	Headmaster (1st)	College/University	Cert.Ed., B.A. - external	Classics/Music	St John's
Independent	38	Headmaster (2nd)	University	M.A., M.Sc.	Hist/Management	Grammar School
Independent	59	Director of Studies	University	M.Sc.	Biology	Grammar School and St Mary's
Deputy Head Teachers						
G.S.	47	Boys Pastoral Care/ Careers	College/University	Cert.Ed., B.A.	R.E./Careers	St John's
G.S.	45	Girls Pastoral Care/ Careers	College/University	Cert.Ed., Dip.Ed.	English/Careers	St Mary's



## APPENDIX II

### TO HEADS OF DEPARTMENTS FROM TWO MEMBERS OF THE DESIGN DEPARTMENT

#### PROPOSAL TO RETHINK OPTION SCHEMES FOR IV AND V YEARS

The following is meant as a basis for discussion only. It is realised that should such a scheme be adopted there may well be timetabling snags - but these would presumably be thrashed out after the general principle of the idea had been accepted.

The thinking behind this approach is based on the idea that pupils need to work on subjects which are allied in order to exploit their strengths and to minimise their weaknesses.

Early specialisation to some extent maybe, but care has been taken to include subjects outside the main stream of each course to act as a balance; for example to give a basic working knowledge of science where necessary or a language or Arts subject as an 'antidote' to a Scientific or Technical Course.

It is suggested that the present 'Ex' band type of pupil would be timetabled separately as now, using either Course A or B with additions or a combination of both.

It might be necessary for the purposes of this scheme to designate Music an ARTS subject and Home Economics, Child Care and Rural Science as TRAINING subjects.

Each pupil would do these CORE subjects and then choose one of the following courses - opting within the course where necessary e.g. in COURSE 'A' where Science appears this might be either General Science, Physics, Chemistry, Biology or Human Biology.

#### CORE SUBJECTS which ALL do

Maths

English Language

P.E.

Careers R.E.

Pupils then choose one of the following courses:

#### Course 'A' ARTS BASED

English Lit

1 Mod Language

Latin

History

1 Science

1 Design or Music

#### Course 'B' SCIENCE BASED

Chemistry )

Physics )

Biology )

Human Biology )

Geography

1 Design or Music

Any 3  
of these

cont:

## APPENDIX II - Cont

### Course 'C' TECHNICAL COURSE

Physics  
Additional Maths/Comp Studies  
Technical Drawing  
Metalwork/Woodwork  
1 Arts  
1 Design/Music

### COURSE 'D' GENERAL COURSE

Humanities  
General Science  
Technical College Options  
Design or Training

# APPENDIX III - PROPOSAL FOR FUTURE CURRICULUM 24.4.79

## FOURTH YEAR CURRICULUM 1980-81

A.	Numbers	1979-80	N = 242	Options = 216	Ex = 26
		1980-81	N = 256	Options = 216	Ex = 40

## B. Main Options (broadly as now, with minor adjustments)

Eng 6	Ma 5	A (sci) 5	B (hum) 5	C 5	D 4	E 4	Car 1	R.E. 2	P.E. 3
		Phys Biol Hum Biol Rur Sci Ch Care	Hist Geog R.E. Hum	French Euro St Art T.D. Computers Metal Pot Needle H.E.	Chem Music Drama Art Span Needle T.D.	Comps Metal T.D. Wood R.E. H.E. Cater LINK courses			

## C. Ex Band (reduce from 6 to 5 options, with R.E. as 'extra' subject)

Eng 5	Ma 5	(1) 5	(2) 5	(3) 5	(4) 4	(5) 4 or 5	Car 1	R.E. 2 or 3	P.E. 3
		Phys Biol	Hist Chem	As above plus Hist	As above plus Geog Biol	Latin Geog Computers		Exam courses	

APPENDIX IV  
CHOICE OF SUBJECT 1978-80  
Notes for Parents

Pupils so far have had a broad educational course. Because of examination demands it is necessary to narrow this for two years 14-16. Decision about which subjects to continue must involve pupils, parents and staff.

1. Examination system available at 16

'O' Level is for the best 30%. A subject examination. Grades A B C (pass) D E (fail). Administered by a number of university based boards; we take Southern Universities, Bristol-based.

C.S.E. does not deal with the best 20% but starts below this and goes down below half-way mark. Grades 1 2 3 4 (pass) 5 6 (fail). Grade 1 = 'O' Level Grade C or higher. Administered by locally based examination boards, teacher-controlled; we take West Midlands, Birmingham-based. Exams can be in 3 'modes'; Mode 1, set and examined by board; Mode 2, syllabus made by school, examined by board; Mode 3, syllabus made and examined in school, moderated by board.

'16+' is an experimental examination run jointly by 'O' Level/C.S.E. boards, covering full range of the 2 exams. Papers exist in a few subjects only.

Other exams e.g. for Child Care which are most suited to pupils of below average ability.

Entry to both 'O' Level and C.S.E. in any one subject is usually impossible as both examinations are timetabled at the same time.

2. Assessment of pupils' prospects

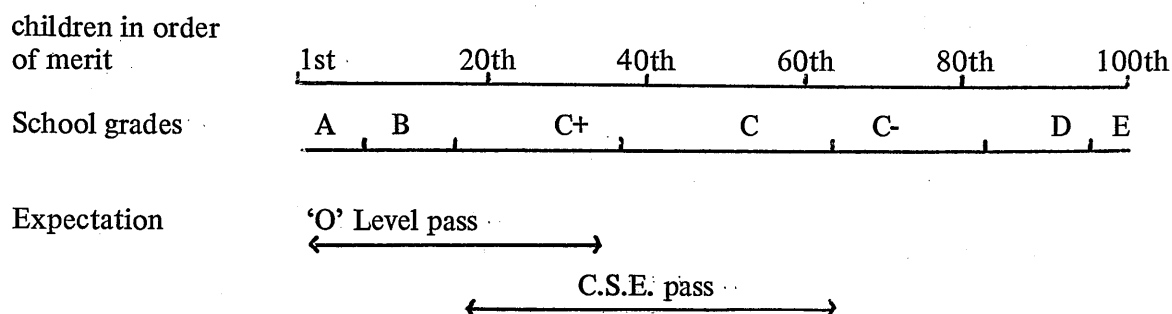
Grades achieved by pupils so far will give some indication, though not entirely reliable: so much depends upon maturity in next two years, industry, etc. The diagram shows how the school grades correspond to 'O' Level/C.S.E.

Some courses lead definitely to one exam or the other.

We prefer to postpone decision till Christmas before the exam. Parents are then given an opportunity for discussion before final decision is made. In the end if parents wish an entry against the advice of the school we may ask them to pay the fee.

cont:

## APPENDIX IV - cont



### 3. Decision about subjects

- A. A course to fit the overall ability of the pupil, i.e. no 'soft options' for the good good brains, nor subjects impossible of attainment for the weaker.
- Some may be able to take 8 or more subjects, and could enter some at the end of IV year. Others will have great difficulty with a spread of C.S.E.'s in academic subjects.

- B. A course aimed careerwise if possible.
- But the important thing at this stage is to keep as many doors open as possible.

- C. A broad course.
- All must do English and Maths, to exam if appropriate
- All do R.E., P.E. and Careers (all non-examination).
- In addition at least one Science, and one Humanities subject should be included.
- Those who can take a foreign language should certainly do so.

Many, not necessarily the least bright, may get a great deal from a craft, art, music or drama. Options exercised in 2nd and 3rd years should normally be continued.

We have allowed pupils to list 7 in addition to Maths and English, but only the most able will be able to tackle so large a number.

Some courses are at the Technical College and take a full day; in this case pupils may miss some time at other subjects. Entry to Tech. Craft courses is by test, set by the Technical College.

- D. How the decision is made
- Pupils are being asked to list preferences.
- Staff are being asked to comment.

School examinations will take place at the end of this term.

#### APPENDIX IV - cont

Parents and pupils may attend a Careers convention on 31st January.

Parents will be invited to meet subject teachers on 8th February.

In the meantime we shall use the choice list to group subjects to form a timetable, and this may affect some choices.

Small numbers may mean loss of a subject.

In certain subjects limited numbers only can be accommodated.

In most cases parents, pupils and staff can come to agreement, but the school must reserve the right in the end to say 'No'.

Changes of mind are usually allowed till October half-term, but obviously this is a disadvantage and should be avoided if possible.

## APPENDIX VI

### MAGDALENE SCHOOL

Confidential

#### PROPOSALS RELATING TO THE TEACHING OF LOWER ABILITY CHILDREN

1. The concept of a 'Basic Studies' department ends.
2. S.L.U. becomes 'independent' under ER, but prepresented to Heads of Department by GS.
3. English, Maths (and Humanities and Science) are responsible for the teaching of their own lower ability pupils. Each department (including possibly Science and Humanities) should have a member with special responsibility for overseeing remedial and lower ability work.
4. GS, JW, AD will be responsible to the particular Head of Department for whom they are teaching. (JW will join Maths department, GS, the English department).
5. Mr Smith's responsibilities.
  - 1) responsible to Head and Director of Studies for large-scale testing.
  - 2) responsible to Heads of Department for individual testing.
  - 3) to act as a service agent to English, Maths, Humanities and Science departments; to be invited (ex officio, or when relevant) to their departmental meetings to give specialist advice, or accept specialist tasks.
  - 4) responsible for the curriculum and some of the teaching of the Senior Unit.
  - 5) to have some facility for withdrawing pupils for specialist remedial tuition.
  - 6) remains a Head of Department in status, attends their meetings and represents amongst other things, the interests of both special units.

The aim is twofold: to rationalise the present situation where what actually happens is not that envisaged by the academic structure of the school; and to provide the best all round education for lower ability children.

Headmaster, June 1979

# APPENDIX V

<b>MAGDALENE SCHOOL</b> <b>COURSES FOR FOURTH YEAR 1980-82</b>	<b>NAME</b> _____ <b>FORM</b> _____				
<p>Full instructions on how to complete this form are given on the following pages.          Please refer to them first.</p> <p><b>Note:</b> You should tick ONE subject (your 1st choice) from</p> <ul style="list-style-type: none"> <li>(i) each Option - (A to E)</li> <li>(ii) put a '2' by your second choice in each Option</li> <li>(iii) the examinations referred to below are: G for G.C.E. 'O' level,              C for C.S.E., 16+ for the combined 'O' level/C.S.E. examination.</li> </ul> <p>If you wish to be considered for Course Ex complete Page 2 also.</p>					
<b>OPTION A</b>	<b>EXAMS</b>	<b>CHOICE</b>	<b>OPTION B</b>	<b>EXAMS</b>	<b>CHOICE</b>
PHYSICS	G C		HISTORY	G C 16+	
BIOLOGY	G C		GEOGRAPHY	G C	
HUM BIOL	G C		HUMANITIES	C	
RURAL SC	C		RELIG EDUC	G C	
CHILD CARE	C				
<b>OPTION C</b>			<b>OPTION D</b>		
FRENCH	G C		CHEMISTRY	G C 16+	
EURO STUD	C		BIOLOGY	G C	
ART	G C		DRAMA	G C	
TECH DRAW	G C		MUSIC	G C	
COMP STUD	G C		ART	G C	
MET WORK	G C		GEOGRAPHY	G C	
ART/POT	G C		NEEDLECRAFT	G C	
HOME ECON	G C		SPANISH	G C	
NEEDLECRAFT	G C		TECH DRAW	G C	
WOODWORK	G C				
<b>OPTION E</b>			<b>TECHNICAL COLL LINK COURSES</b>		
COMP STUD	G C		BUILDING C.S.E.	C	
TECH DRAW	G C		BUILDING GEN	Non-exam	
MET WORK	G C		ELECTRI CRAFT	C	
WOODWORK	G C		MOTOR VEHICLE MAINTENANCE	C	
DRAMA	G C		TYPEWRITING	C	
RELIG EDUC	G C		<b>MODULAR COURSES</b>		
HOME ECON	G C		1. Retail Trade, Hairdressing, Home Decorating	Non-exam	
CATERING	C				
LATIN	G		2. Building Motor Vehicle Electri Craft	Non-exam	



## COURSE EX

Course Ex is intended primarily for the more academically able pupils, and the choice of subject is more limited. Although the School will make the final decision on who goes into Course Ex, any pupil who so wishes, may complete this page. It is assumed that if you do complete this page, it is your preference to be considered for Course Ex.

MAGDALENE SCHOOL COURSE 'EX' FOURTH YEAR 1980-82			NAME _____ FORM _____		
Full instruction on how to complete this form are given on the following pages. Please refer to them first.					
OPTION 1	EXAMS	CHOICE	OPTION 4	EXAMS	CHOICE
PHYSICS	G		CHEMISTRY	G 16+	
BIOLOGY	G		GEOGRAPHY	G	
OPTION 2			BIOLOGY	G	
HISTORY	G 16+		MUSIC	G	
CHEMISTRY	G 16+		DRAMA	G	
OPTION 3			ART	G	
FRENCH	G		HIST OF ART	G	
HISTORY	G 16+		SPANISH	G	
ART	G		NEEDLECRAFT	G	
ART/POT	G		TECH DRAW	G	
TECH DRAW	G		OPTION 5		
COMP STUDS	G		LATIN	G	
METALWORK	G		GEOGRAPHY	G	
WOODWORK	G		COMP STUDS	G	
HOME ECON	G		RELIGIOUS EDUCATION		
NEEDLECRAFT	G		AS EXAM SUB	G	
			AS NON-EXAM SUBJECT		

## INSTRUCTIONS FOR COMPLETING PAGES 1 AND 2

1. You should read all of this leaflet carefully before making your choice.
2. Please write in pencil in case you change your mind later.
3. Please indicate a second choice in each option group in case your first choice is not possible for some reason.
4. Everyone should fill in Options A - E. If you wish to be considered for Course 'Ex' you should fill in Course 'Ex' also.

These further notes, and the following pages, are intended to help you make your choices.

1. Options which have already been made, for example, Latin, Spanish, will normally be expected to be included in your choice.
2. Every effort will be made to allow pupils to follow the course of their choice, but circumstances may arise which will make it impossible to run some courses.
3. Teachers will also be discussing the choices you make and, in the end, the individual teachers may have to decide whether your choices are entirely suitable.
4. In most subjects there will be the possibility of taking a G.C.E. 'O' level or C.S.E. examination and the decision on which examination, will usually be left until late in the course.
5. You should note that the following examination courses at the Technical College (C.S.E. Building, Motor Vehicle Studies and Electrical Crafts) take a full day each week. This means that the afternoon lessons at school are missed and pupils are expected to make up this work. Also pupils must pass a test taken at the Technical College (usually early in the Summer Term) before they can be accepted on one of these courses.
6. 'Choice and suitability of examination' is based on the assumption that pupils will be working to full capacity. Where there is persistent failure to work adequately, and consequently little chance of success, the pupil is normally not entered for the examination at all.

## UPPER SCHOOL COURSES

### Introduction

These notes are offered for the guidance of parents and pupils when choices of subjects are being considered. The notes supplement the information given by individual Heads of Department and by the Careers Department. Any parent or pupil who requires further information should contact the appropriate member of staff through Mrs Rees, the Director of Studies.

### Compulsory Subjects

During the 4th and 5th Years each pupil will take

English Language and Literature    G    C

Mathematics                                    G    C

Physical Education

Religious Education

Careers

For most pupils there will be a choice of five further subjects to be studied, one from each Option A - E. These courses can lead to about eight examination subjects. Pupils who are thought to be capable of eight or more 'O' level examination subjects will be guided into Course 'Ex' (Extra Subject Course).

### Optional Studies

#### Human Biology (G C)

During the two year course, which can lead to G.C.E. 'O' level or C.S.E. a study of how the human body works is made. This includes its structure, physiology and how the various parts relates to one another; the rules of personal hygiene and public health.

It is a useful subject for pupils intending to follow a course in Catering, Nursery Nursing, Nursing, etc. or those who are just interested in finding out how their body works. Although it is quite a demanding subject it is not usually acceptable as a basis for an 'A' level in Biology.

#### Physics (G C)

Physics is the study of the physical world in terms of mass and energy. It was realised only recently that mass and energy under certain circumstances were inter-convertible. For example, when a radio active element decays it loses mass and releases energy as high speed particles or waves.

### Physics - cont

These kinds of changes form the subject matter of Physics. But how are these changes studied? Chiefly, by employing the scientific method. Observations are made, readings and measurements collected, and this data is arranged in a pattern (theory). Armed with this theory interesting questions occur to the inquiring mind; the answers to which are tested by experiment. In time a body of knowledge is built up.

What value does that knowledge have and why should we learn about it? First of all it helps to explain the physical world and dispel fear. Secondly, we are more able to control our environment and understand its ways. Perhaps this knowledge will enable us to share in the excitement of space exploration and scientific research. Then we might be sufficiently interested to want to join the scientific community as: craftsman, technician, teacher, doctor, scientist or engineer.

### Biology - The Study of Life (G C)

In School the Biology course gives an introduction into the living world, its similarities and differences, and how each living thing fits into the pattern of life. This is done by using the scientific methods of observing, recording and interpreting what we have found out. This involves studies of microscopic plants and animals right up to human beings - their individual structure and function, and the parts played by each in 'The Balance of Nature'. Biology is a useful subject as a 'Science' qualification and gives an insight into the living environment.

### Rural Science (c)

This subject involves some study of the three main sciences - Physics, Chemistry and Biology. The course is varied and covers practical and theoretical work on plants and animals and their part in food production, the economy of the land and also the leisure and pleasure of plants and animals. It gives an insight into how and why the food we eat is produced and also a preparation for our future role as gardener and cook in the household.

### Chemistry (16+)

Chemistry is the study of how materials react. The kinds of question that can be answered by studying Chemistry include 'why did it go bang?'; 'what can I use to clean my motorbike exhaust?'; 'why do my jeans fade when dropped into the swimming pool?'.

Although Chemistry is a science in its own right, it is most useful in supporting the other sciences, such as the biological, physical and those called the earth sciences, since any reaction between materials - be it living or non-living - involves Chemistry.

**Child Care (c)**

The aims are: to give an understanding of the needs and development of the child up to the age of five; to develop the skills and abilities needed to care for a child; to teach parents of the future how to provide good, healthy and happy homes for children. The Grade is made up by totalling the marks given for theoretical and oral examinations, a study and teacher's assessment.